Guidelines for Infection Control

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These guidelines update and replace the January, 2000 Virginia Department of Health (VDH) "Policy for Infection Control in Health Department Personnel." These revised guidelines provide recommendations for establishing a health care policy for health districts in Virginia, and methods for reducing the transmission of infections from patients to VDH personnel, and from personnel to patients. These guideline are based on and should be used in conjunction with the following documents:

1. Guideline for infection control in health care personnel. *American Journal of Infection Control,* 1998 [1]

2. Guideline for isolation precautions in hospitals. *Infection Control and Hospital Epidemiology,* 1996 [2]

3. Bloodborne pathogens standard, revised; final rule. Occupational Safety and Health Administration. 29CFR 1910.1030, 2001 [3]

4. Immunization of health care workers. *MMWR*.1997; 46 (RR-18): 1-44 [4]

5. Public health service guidelines for the management of occupational exposures to HBV, HCV and HIV and recommendations for postexposure prophylaxis. *MMWR* 2001; 50 (RR-11):1-34 [5].

6. Guideline for hand hygiene in health-care settings. *MMWR*. 2002; 15 (RR-16): 1-45 [69]

7. Guidelines for preventing the transmission of mycobacterium tuberculosis in health care facilities, *MMWR.* 1994; 43 (RR-13): 1-132 [11]

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Attachment 3. Appendix D. 29 CFR Part 1910.1030 Occupational Exposure to Bloodborne Pathogens; Final Rule.

Attachment 4. Immunization of Health-Care Workers: Recommendations of the Advisory Committee on Immunization Practices (ACIP) and the Hospital Infection Control Practices Advisory Committee (HICPAC).

Attachment 5. Updated U.S. Public Health Service Guidelines for the Management of Occupational Exposures to HBV, HCV, and HIV and Recommendations for Postexposure Prophylaxis.

Attachment 6. Guideline for Hand Hygiene in Health-Care Settings: Recommendations of the Healthcare Infection Control Practices Advisory Committee and the HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force.

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Glossary of Selected Terms

***VDH personnel*:** all VDH employees working in settings where they have the potential for exposure to patients or infectious materials, including body substances, contaminated medical supplies and equipment, contaminated environmental surfaces, or contaminated air. (Appendix 1 is a list of VDH job classes where employees have potential for occupational exposure to infectious materials.)

Occupational exposure: reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of a VDH employee's duties.

Potentially infectious materials:

(1) blood;

(2) all body fluids, secretions, and excretions *except sweat*, regardless of whether or not they contain visible blood, including, but not limited to: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, breast milk and saliva in dental procedures;

(2) any unfixed tissue or organ (other than intact skin) from a human (living or dead); and

(3) HIV-containing cell or tissue cultures, organ cultures, and HIV- or HBV- or HCV-containing culture medium or other solutions; and blood, organs, or other tissues from experimental or non-experimental animals infected with HIV, HBV, HCV, or rabies.

Bloodborne Pathogens: pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to:

HIV: human immunodeficiency virus

HBV: hepatitis B virus

HCV: hepatitis C virus

Direct-contact transmission: direct body surface to body surface contact and physical transfer of microorganisms between a susceptible host and an infected or colonized person or direct contact with blood or body fluid (e.g. MRSA or VRE carrier, transmission of bloodborne pathogen during dental procedure, decapitation of rabid animals).

Indirect-contact transmission: contact of a susceptible host with a contaminated intermediate object (e.g., instruments, contaminated hands of health care providers that are not washed between patients).

Droplet transmission: conjunctival, nasal, or oral mucosa contact of a susceptible host with droplets containing microorganisms generated from an infected person that are propelled a short distance (by

coughing, sneezing, and talking, or during certain procedures such as sputum induction).

Airborne transmission: contact (via inhalation) of a susceptible host with airborne droplet nuclei or dust particles containing microorganisms that can be dispersed widely by air currents.

Common vehicle transmission: contact of a susceptible host with contaminated items such as food, water, medications, devices, and equipment.

Vector borne transmission: contact of a susceptible host with vectors such as mosquitoes, fleas, and ticks, capable of transmitting infectious disease to humans.

MRSA: methicillin resistant Staphylococcus aureus

VRE: vancomycin resistant enterococci

VRSA: vancomycin resistant Staphylococcus aureus

SARS: severe acute respiratory syndrome

I. Elements of an Infection Control Policy

A. Health assessment of health care personnel

1. The district health director or designee will conduct a health inventory on VDH personnel who will have human or animal blood/body fluid contact. The health inventory will be conducted before VDH personnel begin duty or upon receiving a new work assignment. See form in Appendix 2, page 48.

2. Based on the results of the health inventory, the district director may order further physical examination and testing of VDH personnel. This may include examinations to detect conditions that might increase the likelihood of transmitting disease to patients or to detect unusual susceptibility to infection. These examinations may also serve as a baseline for determining whether any future problems are work related.

3. Health assessments of VDH personnel, other than the initial health inventory, should be performed as required to evaluate work-related illness or exposures to infectious diseases.

4. Routine culturing of VDH personnel (e.g., cultures of the nose, throat, or stool) should not be performed as part of the initial health inventory.

5. Screening for tuberculosis (TB) should be conducted on VDH personnel who have potential for exposure to TB using the intradermal (Mantoux), intermediate-strength (5 tuberculin units) PPD test. Personnel with a previous positive PPD test should have a baseline symptom assessment performed. A chest x-ray should be performed if assessment reveals TB-like symptoms.

6. Routine serologic screening for some vaccine-preventable diseases (such as hepatitis B, measles, mumps, rubella, or varicella) should be conducted on VDH personnel if deemed to be cost-effective and beneficial by the district health director.

B. Health and safety education of health care personnel

1. The district health director will ensure that all personnel are provided with training and education on infection control and safety procedures. These trainings should be provided to new employees and annually thereafter. The education on infection control and safety procedures should be appropriate and specific to their work assignments.

2. The district health director will ensure that all personnel know which medical conditions and medical treatments render them more susceptible to or more likely to transmit infections. There are options (e.g., request for work reassignment) for greatly reducing their risk of transmitting or acquiring infection. The district health director should encourage each employee to consult with their primary care physician to determine if they have

conditions or are receiving treatment that may put them at increased risk for transmitting or acquiring infection.

3. The district health director will assure that the district Infection Control Manual is readily available to all district personnel and will assure that information is appropriate, in content and vocabulary, to the educational level, literacy, and language of all personnel.

C. Policies regarding job-related illnesses and exposures

1. Each health district shall maintain a confidential record on VDH personnel that includes information obtained during the medical inventory, immunization records, results of testing performed to evaluate exposure to communicable disease (i.e. HbSAg, PPD), and reports of work-related illnesses or exposures in accordance with Virginia and federal regulatory requirements [3].

2. Each health district will ensure that when data on illnesses, injuries, or exposures are made public, the individual's confidentiality will be maintained by releasing only aggregate numbers.

3. Each health district will maintain a personnel database, preferably computerized, that allows tracking of personnel immunization, screening tests, and assessment of trends of infections and diseases in personnel. Copies of an employee's individual record are to be available to that employee upon request. Records of job-related illnesses and injuries must be kept for the length of employment plus 30 years.

4. Each health district will establish a readily available mechanism for VDH personnel to obtain advice about illnesses they may acquire from or transmit to patients.

5. Each health district will develop written protocols for handling employees exposed to job-related infectious diseases such as bloodborne pathogens, TB, bioterrorism agents.

6. Each health district will develop written protocols for employees who may expose patients to infectious diseases (e.g. influenza, herpetic lesions).

7. Each health district will establish a written bloodborne pathogen exposure plan to eliminate or minimize exposure, and to provide expedient investigation, follow-up testing (of patient and employee), treatment, and post exposure surveillance of cases.

8. Each health district will periodically review and assess aggregate data gathered on personnel health (e.g., rates of PPD-test conversion) to determine the need for action.

9. Each health district shall ensure that federal, state, and local standards on medical record keeping and confidentiality are met [3, 6].

II. Protection of Health Care Personnel and Patients from Infections

(See Appendix 7: *Guideline for Isolation Precautions in Hospitals,* 1996, updated 1997 [2] for further details)

A. Administrative Controls

1. Education - Develop a system to ensure that VDH personnel are educated about the use of precautions and their responsibility for adherence to them.

2. Adherence to Precautions - Periodically evaluate adherence to precautions and use findings to direct improvements.

3. Safety needle evaluation - Annually re-evaluate available safety needles and lancets used for immunizations, PPD, venipuncture, and capillary puncture. Maintain documentation of the re-evaluations.

B. Standard Precautions

(Note: Standard Precautions [2] combines the major features of Universal Precautions [7, 8] and Body Substance Isolation [9, 10] and apply to all patients, regardless of their diagnosis or presumed infection status.)

1. Handwashing

    a. Wash hands immediately after gloves are removed, between patient contacts, and when otherwise indicated to avoid transfer of microorganisms to other patients or environments. It may be necessary to wash hands between tasks and procedures on the same patient to prevent cross-contamination of different body sites.

    b. Use nonantimicrobial soap and water for routine handwashing. If there is no visible contamination with body fluids, an alcohol based waterless hand rub may be used. [69]

    c. Artificial nails should not be worn by employees who deliver direct patient care. Natural nails should be no longer than ¼ inch.[69]

2. Gloves

    Wear clean, nonsterile gloves when performing vascular access procedures or when touching blood, body fluids and contaminated items. Change contaminated gloves between tasks and procedures on the same patient. Remove gloves promptly after use, before touching uncontaminated items and environmental surfaces, and between patients. Wash hands immediately.

Notes:

(i) Some procedures require sterile gloves to protect the patient.

(ii). Latex allergy in the health care worker and the patient should be considered when choosing gloves.

3. Mask, Eye Protection, Face Shield

   Wear a mask and eye protection or a face shield to protect mucous membranes of the eyes, nose, and mouth during procedures and patient-care activities that are likely to generate splashes or sprays of blood or body fluids.

4. Gown/lab coat

   Wear a disposable gown/lab coat to protect skin and to prevent contamination of clothing during procedures and patient-care that are likely to generate splashes or splatters of blood or body fluids. Remove the soiled gown or lab coat as promptly as possible, and wash hands to avoid transfer of microorganisms to other patients or environments.

5. Patient-Care Equipment

   Handle contaminated patient-care equipment soiled with proper personal protective equipment to prevent skin and mucous membrane exposures. Ensure that contaminated reusable equipment is not used for the care of another patient until it has been cleaned and reprocessed appropriately. Ensure that single-use items are discarded properly.

6. Environmental control

   Clean and disinfect contaminated environmental surfaces, examination tables, counters, hard-surfaced flooring, waste pails, pediatric toys and other frequently touched or contaminated surfaces at the end of the session/clinic/day.

7. Linen/fluid impervious absorbent materials

   Handle, transport, and process used linen and materials (i.e. exam table paper, Chux) soiled with blood or body fluids to prevent skin and mucous membrane exposures and contamination of clothing.

8. Needles, lancets, scalpels and other sharps

   Safety devices should be used if available. Place used disposable sharp items in appropriate puncture-resistant containers, which are located in the area in which the items are used. Place reusable dental syringes and needles in a puncture-resistant container for transport to the reprocessing area. Used needles should never be recapped. If recapping

is necessary, use a one handed “scoop”technique.

9. Resuscitation equipment

   Use mouthpieces, resuscitation bags, or other ventilation devices as an alternative to mouth-to-mouth resuscitation methods.

C. Airborne and Droplet Transmission

1. Droplet Precautions

   In addition to Standard Precautions, use Droplet Precautions for patients known or suspected to be infected with microorganisms transmitted by large particle droplets, larger than 5 micrometers in size. These droplets can be generated by the patient during coughing, sneezing, and talking. . Examples of infections transmitted by this route include neisseria meningitis, mycoplasma pneumonia, streptococcal pharyngitis, pertussis, influenza, and plague.

   a. Patient Placement

      Place the patient in an exam room away from other patient contact. In the waiting room, maintain spatial separation of at least 3 feet between the infected patient and other patients, visitors, and staff. Special air handling and ventilation are not necessary.

   b. Mask

      In addition to Standard Precautions, wear a surgical mask when working within 3 feet of the patient.

   c. Patient Transport

      If transport or movement is necessary, minimize dispersal of droplets by placing a surgical mask on the patient.

2. Airborne Precautions

   These particles are referred to as "droplet nuclei" and are smaller than the large particles referred to as droplet precautions. "Droplet nuclei" can remain suspended in air and can be dispersed widely by air currents. Examples of diseases transmitted this way include measles, varicella, and tuberculosis.

   a. Patient Placement

      Place the patient in a negative pressure exam room [2] or in a room equipped with

an ultra-violet (UV) light. Keep the room door closed while the patient is in the room. Patients with known or suspected pulmonary TB may be treated in a well ventilated area if no other facilities are available. Provide the patient with a surgical mask to use while in the facility.

b. Respiratory Protection

Wear respiratory protection (NIOSH-approved mask, N95 or better, that has been properly fit tested) when working with a patient with known or suspected infectious pulmonary tuberculosis. [11, 12] Susceptible persons should not enter the exam room of patients known or suspected to have measles (rubeola) or varicella (chickenpox) if other immune caregivers are available. If susceptible persons must be in contact with a patient known or suspected to have measles or varicella, they should wear respiratory protection (NIOSH-approved mask that has been properly fit tested). [12]

c. Additional Precautions for Preventing Transmission of Tuberculosis

Consult CDC "Guidelines for Preventing the Transmission of Tuberculosis in Health-Care Facilities" [11] for additional prevention strategies.

D. Contact Precautions

In addition to Standard Precautions, use Contact Precautions with patients to protect against transmission of microorganisms that can be transmitted by direct or indirect contact. Examples of infections transmitted by this route include enteric infections such as *Shigella*, or prolonged environmental survival such as impetigo, *Clostridium difficile*, respiratory syncytial virus (RSV), vancomycin resistant enterococcus (VRE) and methicillin resistant Staph. aureus (MRSA)

1. Gloves and Handwashing

Follow Standard Precautions for handwashing/decontamination and the use of gloves.

2. Gown/lab coat

Wear a disposable gown/lab coat to protect skin and to prevent contamination of clothing during procedures and patient-care. Remove the soiled gown or lab coat before removing gloves and as promptly as possible. Wash hands to avoid transfer of microorganisms to other patients or environments.

3. Patient-Care Equipment

When possible, use disposable patient-care equipment.

E. Additional Precautions for Preventing the Spread of Methicillin and Vancomycin Resistance

MRSA & VRE

In recent years, there has been an increase in infections and asymptomatic carriage of a type of Staphylococcus aureus that is resistant to methicillin, and of certain Enterococcus species, which have become resistant to vancomycin. The failure of these antibiotics to treat infections is a public health hazard. Every effort should be made to prevent the spread of MRSA (methicillin resistant Staph. aureus) and VRE (vancomycin resistant enterococci).

These organisms are commonly found on the skin of carriers. MRSA may also be in sputum and nasal secretions. Rectal skin folds may harbor either organism.

Standard precautions and contact precautions are used when handling patients colonized with MRSA or VRE. Items contaminated with wound drainage or body fluids may be discarded in regular trash unless dripping or saturated with blood or other body fluid. Items that can released body fluids during handling should be placed in a biohazard bag.

Healthcare workers should wash their hands with antimicrobial soap or an alcohol-based waterless hand cleanser in the manner described under Standard Precautions.

The use of disposable items is encouraged. Contaminated reusable items should be disinfected with an EPA approved disinfectant before being placed back into service for another patient. Since these organisms may remain viable for weeks on environmental surfaces, thorough cleaning of exam tables and other fixtures that may have become contaminated is recommended.

For additional strategies for preventing the spread of methicillin and vancomycin resistance consult the Hospital Infection Control Practices Advisory Committee report on preventing the spread of vancomycin resistance [14] and the Control of Communicable Diseases Manual [15].

F. Agents of Bioterrorism

1. The use of biological weapons has opened a new frontier in infection control issues. Infectious agents may not present themselves in the traditional manner of disease as it has been known.

    a. Patients may present with unusual symptoms, with a more severe form of a disease due to artificially achieved high doses of infectious agents, or with diseases not endemic or previously described in a certain geographical area.

b. They may present in unusually high numbers of patients simultaneously or from various population groups at one time.

c. A weapon, that is, a powder, spray or contaminated food or water, for example, may be present, in addition to specimens from patients.

2. These factors pose concern for caution among healthcare workers.

a. Education about biological weapons and preparation for handling the aftermath of a biocrime are new and essential elements of good infection control practices.

b. Not only is it important to understand how an infectious disease is spread, in order to devise effective infection control practices, but also it is important to understand how weaponized infectious agents can cause disease.

c. Just as disease can be spread by respiratory routes, by contact with fomites, or by ingesting contaminated food or water, it is important to understand that weaponized biological agents can spread disease by aerosolization, contact, or ingestion.

d. In addition to caution when treating patients, it is important to take proper precautions when collecting specimens for laboratory testing and with transporting those specimens to the appropriate site(s) for testing.

This is a summary of safety precautions recommended when handling suspected bioterrorism agents in cases of disease and in environmental samples. Standard Precautions are to be used with most bioterrorism agents. There are a few exceptions, which are presented in the table below. More detailed information can be found at http://www.bt.cdc.gov.

	Transmission	**Handling Precautions**
Anthrax *Bacillus anthracis* (bacterial)	Aerosolized in bioterrorism attacks, no person-to-person transmission Inhalational, no person-to-person Cutaneous; can be transmitted by direct contact with vesicular secretions Gastrointestinal; ingested with food, no person-to-person transmission	Standard precautions Items that may re-aerosolize spores should be handled carefully. Clothes and loose objects are bagged up. Patients shower with soap and water. Surfaces are disinfected with 10% bleach.
Plague (pneumonic) *Yersinia pestis* (bacterial)	Airborne in bioterrorism (normally transmitted by infected fleas from rats) Person-to-person transmission is by large droplets.	Standard precautions, plus Droplet precautions until the patient has been on antibiotic therapy for 72 hours. Surgical mask is worn within 3 feet of patient. Isolate or cohort or place patients at least 3 feet apart. Do not place with immunocompromised patients. No special air handling necessary. Door to room may be open. May mask patient if transporting. Surfaces are disinfected with 10% bleach. Standard precautions are used when handling contaminated clothing or fomites.
Smallpox vaccine Vaccinia virus	Direct, person-to-person, Close contact (within 6 feet)	Standard precautions for handling the vaccine. Vaccinated person should cover the vaccination

		site with gauze dressing and then a semi-permeable dressing.
Smallpox Variola virus	Large and small droplet transmission. Person-to-person transmission by airborne, droplet, or contact with skin lesions or secretions. Patient is more infectious if coughing or if hemorrhagic form of smallpox.	Standard precautions, plus Airborne precautions: N95 mask*; patient placed in negative pressure room with 6-12 air exchanges per hour; door to room closed; air vented to outside or through high efficiency filter. *N95 mask is not necessary for persons vaccinated within three years. Contact precautions: clean gloves and gown for all patient contact and anytime in patient room; gown and gloves removed before leaving room; hand washing with an antimicrobial agent; careful management of potentially contaminated equipment and surfaces; disinfection with 10% bleach. Patient in private room or cohorted. Mask patient for transport. Non-critical items can be dedicated to single patient, if possible. If not, they must be thoroughly cleaned before re-use. Laundry, linen, protective clothing is to be laundered on site by vaccinated personnel. If only non-vaccinated personnel are available, laundry must be autoclaved first.

III. Immunization of health care personnel, general recommendations

A. Administrative controls

1. Each health district should formulate a written comprehensive immunization policy for all health care personnel.

2. Each health district will ensure that persons administering immunizing agents are

a. familiar with the up-to-date ACIP recommendations [4]

b. well-informed about indication, storage, dosage, preparation, side effects, and contraindications for each of the vaccines, toxoids, and immune globulins used

c. kept updated on national and local recommendations regarding vaccination of health care personnel (Table 1A,1B,1C and 2).

3. Each health district will ensure that immunization product information is available at all times and that a pertinent health history, especially a history of allergy and potential vaccine contraindications, is obtained from each person before an agent is given (Table 2).

4. Each health district will develop a list of needed immunizations for each employee during screening and a plan to provide the necessary vaccines.

5. In the absence of known occupational exposure, each health district will provide personnel with on-site immunizations or refer personnel to their own health care providers for routine non-occupation-related immunizations against diphtheria, pneumococcal disease, hepatitis A, or tetanus (Table 1B) .

6. Each health district will provide vaccine to personnel who may have occupational exposure to uncommon diseases such as plague, typhus, or yellow fever, or refer them to their own health care providers.

B. Diseases for which immunization of VDH personnel is strongly recommended

On the basis of documented nosocomial transmission, personnel in settings where they have the potential for exposure to patients or infectious materials are considered to be at significant risk for acquiring or transmitting hepatitis B, influenza, measles, mumps, rubella, and varicella. All of these diseases are vaccine-preventable and immunization of personnel against these diseases is strongly recommended by the ACIP and the VDH [4] (Table 1A).

C. Hepatitis C and other parenterally transmitted non-A, non-B hepatitis

No vaccine or other immunoprophylactic measures are available for hepatitis C. Personnel should follow recommended practices for preventing transmission of all bloodborne pathogens [2-4].

D. Other diseases for which immunoprophylaxis is or may be indicated

ACIP does not recommend routine immunization of personnel against tuberculosis, hepatitis A, pertussis, meningococcal disease, typhoid fever, or vaccinia. However, immunoprophylaxis for these diseases may be indicated for personnel in certain circumstances (Table 1B.)

E. Other vaccine-preventable diseases

Health care personnel are not at substantially increased risk compared with the general adult population for acquiring diphtheria, pneumococcal disease, or tetanus. However, they should be up-to-date on diphtheria and tetanus immunizations and receive pneumococcal vaccine if indicated according to ACIP recommendations [16, 17].

IV. Immunization of immunocompromised health care personnel

ACIP has published recommendations for immunization of immunocompromised persons [18]. ACIP recommendations for use of individual vaccines or immune globulins also should be consulted for additional information regarding the epidemiology of the diseases and the safety and the efficacy of the vaccines or immune globulin preparations. Specific recommendations for the use of vaccines depend upon the type of immunocompromising condition (Table 2).

Killed or inactivated vaccines do not represent a danger to immunocompromised personnel and generally should be administered as recommended for workers who are not immunocompromised. Additional vaccines, particularly bacterial polysaccharide vaccines (i.e. *Haemophilus influenzae* type b [Hib] vaccine, pneumococcal vaccine, and meningococcal vaccine), are recommended for persons whose immune function is compromised by anatomic or functional asplenia and certain other conditions. Frequently, the immune response of immunocompromised persons to these vaccine antigens is not as good as that of nonimmunocompromised persons; higher doses or more frequent boosters may be required. Even with these modifications, the immune response may be suboptimal.

1. HIV-Infected Persons

   Specific recommendations for vaccination of HIV-infected persons have been developed (Table 2- HIV Infected). In general, live virus or live bacterial vaccines should not be administered to HIV-infected persons. However, asymptomatic health care personnel need not be tested for HIV infection before administering live virus vaccines.

   The following recommendations apply to all personnel infected with HIV:

   a. MMR vaccine is recommended for all asymptomatic HIV-infected personnel who do not have evidence of severe immunosuppression. Administration of MMR to HIV-infected personnel who are symptomatic, but who do not have evidence of severe immunosuppression, should be considered. Measles vaccine is not recommended for HIV-infected persons with evidence of severe immunosuppression.

   b. Enhanced inactivated poliovirus vaccine (IPV) is the **only** poliovirus vaccine recommended for HIV-infected persons when indicated [19]. Live oral poliovirus vaccine (OPV) **should not** be administered to immunocompromised persons.

c. Influenza and pneumococcal vaccines are indicated for all HIV-infected persons.

V. Prevention of nosocomial transmission of selected infections

A. Bloodborne pathogens, general recommendations

District health directors will ensure that VDH personnel are familiar with precautions to prevent transmission of bloodborne pathogens [2, 7, 8]. Health district personnel should follow guidelines in the Virginia Disease Control Manual and federal guidelines (see Appendix 3) for determining the need for work restrictions for health care personnel infected with bloodborne pathogens.

1. Hepatitis B

   a. Administer hepatitis B vaccine to personnel who perform tasks involving routine and inadvertent (e.g., as with housekeepers) contact with blood, other body fluids (including blood-contaminated fluids), and sharp medical instruments or other sharp medical objects [4, 20, 21].

   b. Before vaccinating personnel, do not routinely perform serologic screening for hepatitis B unless the district health director considers screening cost effective.

   c. Conduct post-vaccination screening for immunity to hepatitis within 1 to 2 months after the administration of the third vaccine dose on personnel who perform tasks involving contact with blood, other body fluids (including blood-contaminated fluids), and sharp medical instruments or other sharp medical objects [4].

   d. Revaccinate persons not found to have an antibody response after the initial hepatitis B vaccine series with a second three-dose vaccine series. If persons still do not respond after revaccination, refer them for evaluation for lack of response, (e.g., possible chronic HBV infection) (Tables 1A and 3).

   e. Follow the recommendations for postexposure prophylaxis in susceptible personnel who have had a needle stick, percutaneous, or mucous membrane exposure to blood and/or body fluids known or suspected to be at high risk for being HBsAg seropositive (Table 3).

2. Hepatitis C

   a. Do not administer immune globulin to personnel who have exposure to blood or body fluids positive for antibody to HCV [22, 23].

b. Follow current CDC recommendations for follow-up of health care workers after occupational exposure to hepatitis C virus [5,22, 23].

c. Consider implementing policies for post-exposure follow-up at baseline and 6 months later for health care personnel who have had a percutaneous or mucosal exposure to blood containing antibody to HCV [5].

3. Human Immunodeficiency Virus (HIV)

a. Follow current recommendations for postexposure prophylaxis (PEP) [5] after percutaneous or mucocutaneous exposure to blood or body fluids containing blood from a source suspected or known to be HIV-infected.

b. Each district health director should ensure that all health care personnel have access to and are familiar with these recommendations.

c. The complete PEP guidelines are not included in this document. Please refer to the *MMWR Public Health Service Guidelines for the Management of Occupational Exposures to HBV, HCV and HIV and Recommendations for Postexposure Prophylaxis, June 2001* [Attachment 5] when evaluating the need for PEP in personnel potentially exposed to HIV.

d. Administrative controls - Each district health director will develop a written plan for dealing with personnel exposed to HIV. The plan should include provisions for immediate PEP and the following:

i. Each health district should ensure that all personnel have access to clinicians who provide post-exposure care during all working hours, including nights and weekends.

ii. Each health district should ensure that anti-retroviral agents for PEP are available for timely administration (i.e., either by providing access to PEP drugs on site or creating links with other facilities or providers to make them available offsite).

iii. Each health district should ensure that persons responsible for providing post-exposure counseling are familiar and kept updated with evaluation and treatment protocols and procedures for obtaining drugs for PEP.

e. VDH personnel should be educated to report occupational exposures immediately after they occur, particularly because PEP is most likely to be effective if implemented as soon after the exposure as possible.

f. VDH personnel who are at risk for occupational exposure to HIV should be

taught the principles of post-exposure management, including options for PEP, as part of job orientation and ongoing job training.

g. Exposure Report

If an occupational exposure occurs, the circumstances and post-exposure management should be recorded on the appropriate Exposure Report Form (see appendices 3, 4 and 5 as example report forms) and placed in the employee's confidential medical record.

h. Post-exposure management, follow-up of personnel exposed to HIV, and recommendations for the selection of drugs for PEP

Post-exposure management, follow-up, and selection of drugs should be determined by a patient's selected physician (PMD or WC panel physician) or the health director (or his/her designee). Appendix 5: the *MMWR Public Health Service Guidelines for the Management of Occupational Exposures to HBV, HCV and HIV and Recommendations for Post-exposure Prophylaxis, June 2001.*

i. Resources for consultation

Clinicians who seek assistance in managing a patient with a potential HIV occupational exposure should consult with local experts in HIV treatment as much as possible. Consultation is highly recommended in pregnancy and if the exposure is reported 48 hours after the occurrence. In addition, the "National Clinicians' Post-Exposure Prophylaxis Hotline (PEP-Line)" has been created to assist clinicians with these issues; telephone (888) 448-4911.

B. Conjunctivitis

Restrict personnel with epidemic keratoconjunctivitis or purulent conjunctivitis caused by other microorganisms from patient care and the patient's environment until drainage ceases. If symptoms persist longer than 5 to 7 days, refer personnel to their PMD or an ophthalmologist for evaluation of continued infectiousness.

C. Cytomegalovirus (CMV)

1. Do not restrict from work personnel who contract CMV-related illnesses.
2. Ensure that pregnant personnel are aware of the risks associated with CMV infection and infection control procedures to prevent transmission when working with high-risk patient groups [2] (Table 4).
3. Do not routinely use workplace reassignment as a method to reduce CMV exposures

among seronegative pregnant personnel.

D. Diphtheria

1. Encourage vaccination with Td every 10 years for VDH personnel [4, 15] (Table 1B).

2. Nasopharyngeal cultures may be obtained from exposed personnel. Monitor for signs and symptoms of diphtheria for 7 days after exposure [24].

3. Administer antimicrobial prophylaxis to personnel who have contact with respiratory droplets or cutaneous lesions of patients infected with diphtheria. Also administer a dose of Td to previously immunized exposed personnel who have not been vaccinated within the previous 5 years [16, 24] (Table 1B).

4. Repeat nasopharyngeal cultures of personnel found to have positive cultures at least 2 weeks after completion of antimicrobial therapy. Repeat antimicrobial therapy if personnel remain culture positive [24].

5. Exclude exposed personnel and those identified as asymptomatic carriers from duty until antimicrobial therapy is completed and results of two nasopharyngeal cultures obtained at least 24 hours apart are negative [24] (Table 5).

E. Gastroenteritis

1. Vaccinate microbiology laboratory personnel who work with *Salmonella typhi* on a regular basis, according to published guidelines [25, 26].

2. Evaluate VDH personnel for symptoms compatible with the suspected cause of gastroenteritis. Exclude personnel with acute gastrointestinal illnesses (vomiting or diarrhea, with or without other symptoms such as nausea, fever, or abdominal pain) from contact with patients and their environment or from food handling until diarrhea ceases and/or until stools are culture negative, as appropriate for the particular disease. [2, 27] (Table 5).

3. Consult the Virginia Disease Control Manual for more information about work restrictions for patient care personnel or food handlers with enteric infections.

4. Determine the etiology of gastrointestinal illness among personnel who care for patients at high risk for severe disease.

5. Allow personnel infected with enteric pathogens to return to work after their symptoms resolve according to guidelines in the Virginia Disease Control Manual.

6. Require that personnel returning to work after a gastrointestinal illness practice good

hygiene, especially hand-washing, to reduce or eliminate the risk of transmission of the infecting agents.

7. If the employee is asymptomatic, do not routinely perform follow-up cultures or examinations of stool for enteric pathogens to determine when the stool is free of the infecting organism.

8. Do not perform routine stool cultures on asymptomatic personnel.

F. Hepatitis A virus

1. Do not routinely administer inactivated hepatitis A vaccine to personnel. Susceptible personnel living in areas where hepatitis A is highly endemic should be vaccinated to prevent acquisition of community-acquired infection [4, 28].

2. Do not routinely administer immune globulin as prophylaxis for personnel providing care or who are exposed to a patient with hepatitis A [28].

3. In documented outbreaks involving transmission of HAV from patient to patient or from patient to health care worker, use of immune globulin may be indicated in persons with close contact with infected persons. Contact the Virginia Department of Health - Office of Epidemiology for information about further control measures (Table 1B).

4. Exclude personnel who have acute hepatitis A from duty for 7 days after the onset of jaundice (Table 5).

G. Herpes simplex virus

1. Evaluate personnel with primary or recurrent orofacial herpes simplex infections on a case-by-case basis to assess the potential for transmission to high-risk patients (e.g., neonates, intensive care unit patients, patients with severe burns or eczema, and severely immunocompromised patients) and the need for exclusion from the care of such patients (Table 5).

2. Counsel personnel with orofacial herpes simplex to cover and not touch the infected lesions, to observe hand washing policies, and not to allow the lesions to touch patients with dermatitis [29].

3. Exclude personnel with herpes simplex infections of the fingers or hands (herpetic whitlow) from contact with patients until their lesions are healed.

H. Measles

1. Ensure that all personnel have documented immunity to measles. (Table 1A). Personnel

may be presumed immune to measles if they have

a. a written document stating dates of administration of the adequate number of doses of vaccine,

b. laboratory evidence of immunity

c. a birthdate before 1957 [4, 30].

2. Administer measles vaccine to persons born in 1957 or later, unless they have evidence of measles immunity as defined above.

3. Administer measles vaccine to personnel born before 1957 if they do not have evidence of measles immunity as defined above and are at risk for occupational exposure to measles [31] (Table 1A).

4. Personnel vaccinated from 1963-1967 with inactivated measles vaccine alone, inactivated vaccine followed within 3 months by live virus vaccine, or with measles vaccine of unknown type should be re-vaccinated with 2 doses of live measles-containing vaccine, separated by at least 28 days.

5. Do not routinely perform serologic screening for measles before administering measles vaccine to personnel, unless the district health director considers screening cost-effective. [30, 31].

6. Administer post-exposure measles vaccine to measles-susceptible personnel who have contact with persons with measles within 72 hours after the exposure [31].

7. Exclude from duty exposed personnel who do not have documented immunity to measles from the fifth day after the first exposure until the 21st day after the last exposure to measles, regardless of whether they receive postexposure vaccine [32] (Table 5).

8. Exclude from duty personnel who acquire measles for 7 days after rash develops or for the duration of their acute illness, whichever is longer [4] (Table 5).

I. Meningococcal disease (disease caused by *Neisseria meningitidis*)

1. Do not routinely administer meningococcal vaccine to VDH personnel [33].

2. Consider preexposure vaccination of laboratory personnel who routinely handle soluble preparations of Neisseria meningitidis and/or laboratory personnel who are routinely exposed to Neisseria meningitidis in solutions that may be aerosolized [33] (Table 1B).

3. Immediately offer antimicrobial prophylaxis to personnel who have had intensive close contact (e.g., mouth-to-mouth resuscitation, endotracheal intubation, endotracheal tube management without the use of proper precautions) with a patient with meningococcal disease before administration of antibiotics [33] (Table 1B).

4. Do not routinely give quadrivalent A,C,Y,W-135 meningococcal vaccines for post-exposure prophylaxis (Table 1B).

5. Administer meningococcal vaccine to personnel (and other persons likely to have contact with infected persons) to control serogroup C outbreaks after consultation with the Virginia Department of Health - Office of Epidemiology [33] .

6. Exclude personnel with Neisseria meningitidis infections from duty until 24 hours after the start of effective therapy. Do not routinely exclude personnel from duty who only have nasopharyngeal carriage of *Neisseria meningitidis*.

J. Mumps

1. Ensure that all personnel have documented immunity to mumps. Personnel may be presumed to be immune to mumps if they have

    a. written documentation stating dates of administration of the adequate number of doses vaccine,

    b. laboratory evidence of immunity,

    c. documentation of physician-diagnosed mumps, or

    d. a birthdate before 1957 [4, 30].

2. Administer mumps vaccine to all personnel without documented evidence of mumps immunity (as defined above), unless otherwise contraindicated (Table 1A).

3. Before vaccinating personnel with mumps vaccine, do not routinely perform serologic screening for mumps, unless the district health director considers screening cost-effective [34].

4. Exclude from duty susceptible personnel who are exposed to mumps from the 12th day after the first exposure through the 26th day after the last exposure or, if symptoms develop, until 9 days after the onset of parotitis [4, 35] (Table 5).

5. Because birth before 1957 does not guarantee immunity to mumps, consider administration of mumps-containing vaccine for personnel born before 1957 who may be exposed to mumps in certain high-risk situations (such as an outbreak) and who may be susceptible.

K. Parvovirus (B19, Fifth Disease)

1. Ensure that pregnant personnel are aware of the risks associated with parvovirus infection and of infection control procedures to prevent transmission when working with high-risk patient groups [36, 37] (Table 5).

2. Do not routinely exclude pregnant personnel from caring for patients with parvovirus.

L. Pertussis

1. Do not administer whole-cell pertussis vaccine to personnel [4] (Table 1C).

2. No ACIP Recommendation for routine administration of an acellular pertussis vaccine to health care personnel. **This is an unresolved issue**.

3. Immediately offer antimicrobial prophylaxis against pertussis to personnel who have had unprotected (i.e., without the use of proper precautions), intensive (i.e., close, face-to-face) contact with a patient who has a clinical syndrome highly suggestive of pertussis and whose cultures are pending. Discontinue prophylaxis if results of cultures or other tests are negative for pertussis and the clinical course is suggestive of an alternate diagnosis [38] (Table 1C).

4. Exclude personnel in whom symptoms develop (e.g., cough for 7 days, particularly if accompanied by paroxysms of coughing, inspiratory whoop, or posttussive vomiting) after known exposure to pertussis from patient care until 5 days after the start of therapy [4] (Table 5).

J. Poliomyelitis

1. Determine whether the following personnel have completed a primary vaccination series:

    a. persons who may have contact with patients or the secretions of patients who may be excreting wild polio viruses and

    b. laboratory personnel who handle specimens that might contain wild polio viruses or who do cultures to amplify virus [19] (Table 1B).

2. For above personnel, including pregnant or immunodeficient personnel, who have no proof of having completed a primary series of polio immunization, administer the enhanced inactivated poliovirus vaccine rather than oral poliovirus vaccine for completion of the series [19] (Table 1B).

3. If a case of wild-type poliomyelitis infection is detected or an outbreak of poliomyelitis occurs, contact the CDC through the Virginia Department of Health - Office of

Epidemiology.

K. Rabies

1. Please refer to the *MMWR Human Rabies Prevention - United States, 1999. Recommendations of the ACIP, January 8, 1999* [39] for detailed guidance on rabies pre- and postexposure prophylaxis.

2. General recommendations:

    a. Preexposure prophylaxis - Provide preexposure vaccination to VDH personnel who work with rabies virus or potentially infected animals in rabies diagnostic or research activities, and other VDH personnel in high-risk groups such as veterinarians and animal handlers [39, 40] (Table 1C).

    b. Postexposure prophylaxis - Rabies is transmitted only when the virus is introduced into bite wounds or open cuts in skin or onto mucous membranes. All postexposure treatment should begin with immediate thorough cleansing of all wounds with soap and water. If available, a virucidal agent such as providone-iodine solution should be used to irrigate the wounds.

        i. When a previously **unvaccinated** VDH employee has been exposed to a potentially rabid animal or human, and the source has not been located nor has symptoms of rabies, give a full course of antirabies treatment (rabies immunoglobulin (RIG) and rabies vaccine - one each on days 0, 3, 7, 14, and 28) according to current recommendations [39].

        ii. In previously **vaccinated** individuals, postexposure therapy is abbreviated to include only a single dose of vaccine on day 0 and one on day 3 [39-43] (Table 1C).

L. Rubella

Ensure that all personnel have documented immunity to rubella. Personnel may be presumed to be immune to rubella if they have 1) written documentation stating dates of administration of the adequate number of doses of vaccine, 2) laboratory evidence of rubella immunity, or 3) a birthdate before 1957 (except women who could become pregnant) [4, 30].

1. Administer rubella vaccine to all personnel without documented evidence of rubella immunity (as defined above) unless contraindicated [4] (Table 1A).

2. Do not perform serologic screening for rubella before vaccinating personnel with rubella vaccine, unless the district health director considers it cost-effective.

3. Do not administer rubella vaccine to susceptible personnel who are pregnant or might become pregnant within 28 days of vaccination [73] (Table 1A).

4. Administer rubella vaccine in the postpartum period to female personnel not known to be immune.

5. Exclude from duty susceptible personnel who are exposed to rubella from the seventh day after the first exposure through the 21st day after the last exposure [4, 30] (Table 5).

6. Exclude from duty personnel who acquire rubella until 5 days after the beginning of the rash [4, 30] (Table 5).

M. Scabies and pediculosis

1. Evaluate exposed personnel for signs and symptoms of mite infestation and refer for appropriate therapy for confirmed or suspected scabies [44].

2. Evaluate exposed personnel for louse infestation and refer for appropriate therapy for confirmed pediculosis [45].

3. Do not routinely provide prophylactic scabicide treatment to personnel who have had skin-to-skin contact with patients or other persons with scabies [44, 46, 47].

4. Consider providing prophylactic scabicide treatment to personnel who have skin-to-skin contact with patients or other persons with scabies in situations where transmission has occurred [44, 48].

5. Do not routinely provide prophylactic pediculicide treatment to personnel who have had contact with patients or other persons with pediculosis, unless they have evidence of infestation.

6. Exclude personnel with confirmed scabies from the care of patients until they have received appropriate treatment and have been shown, by medical evaluation,

N. Severe Acute Respiratory Syndrome (SARS)

1. Restrict personnel who have been exposed to a patient with SARS from work for 10 days following the last exposure. If fever or respiratory symptoms develop, the employee should be evaluated by his/her physician immediately.

2. If no symptoms develop, the employee may return to work 10 days following the exposure.

3. If fever or other respiratory symptoms develop, the employee should be evaluated by his/her health-care provider and follow current infection control guidelines including; staying at home, wearing a mask if in contact with others and following current

recommendations for SARS patients in the home recommended by the Centers for Disease Control (http://www.cdc.gov/ncidod/sars/casedefinition.htm).

4. If symptoms do not progress to meet the suspect case definition within 72 hours after the first symptoms onset, the employee may return to work.

5. If symptoms do meet the case definition for suspected SARS, the employee should continue to follow infection control guidelines and stay home until 10 days after the resolution of fever, if respiratory symptoms are absent or improving. Household contacts should be continually monitored for the development of symptoms. Contacts who develop symptoms should seek medical attention immediately.

O. Staphylococcal infection or carriage

7. Obtain appropriate cultures and exclude personnel from patient care or food handling if they have a draining lesion suspected to be caused by *Staphylococcus aureus.* Work restrictions should be maintained until staphylococcal infections have been ruled out or personnel have received adequate therapy and their infections have resolved [50] (Table 5).

8. Do not routinely exclude personnel with suspected or confirmed **carriage** of *Staphylococcus aureus* from patient care or food handling unless it is shown epidemiologically that they are responsible for disseminating the organism in the health care setting [50, 51] (Table 5).

P. Group A Streptococcus infections

1. Obtain appropriate cultures and exclude personnel from patient care or food handling if they have draining lesions that are suspected to be caused by *Streptococcus pyogenes*, Group A. Work restrictions should be maintained until streptococcal infection has been ruled out or personnel have received adequate therapy for 24 hours [52] (Table 5).

2. Do not routinely exclude personnel with suspected or confirmed **carriage** of group A Streptococcus from patient care or food handling unless it is shown epidemiologically that they are responsible for disseminating the organism in the health care setting [52, 53] (Table 5).

Q. Tuberculosis

1. General recommendations

    a. Each local district or work unit should annually perform an assessment of potential TB exposure for all VDH personnel, including contract employees and volunteers. Specifics of the screening and testing protocols will be based on this

agency assessment. The assessment should include evaluation of numbers of cases of active TB cases within the community, number of cases seen in the facility, and an evaluation of overall risk characteristics of both the client and employee populations

b. Educate all personnel regarding the recognition, transmission, and prevention of TB. Training should be conducted prior to initial assignment and at least annually thereafter.

c. Follow current recommendations outlined in the "Guidelines for Preventing the Transmission of *Mycobacterium tuberculosis* in Health-Care Facilities, 1994" [54].

2. TB screening program

a. Include all VDH personnel who have potential for exposure to *Mycobacterium tuberculosis* in the screening program described below [54].

b. Administer the tuberculin skin test (TST) by using the intra-cutaneous (Mantoux) method of administration of 5 tuberculin units (0.1 ml) PPD [54, 55-57].

c. Ensure that the administration, reading, and interpretation of TSTs are performed by specified, trained personnel [54].

3. Baseline TST

a. Perform initial tuberculosis screening on all VDH personnel including personnel with a history of BCG vaccination, utilizing the current VDH risk assessment tool [54]. Appendix 8.

b. Employees may be tested based on an individual identified through the risk assessment process, or on a facility risk based on occupation and the district infection control plan.

c. When a TST is indicated for VDH personnel, perform two-step, baseline TST tests on personnel who have negative results of initial TST and do not have documentation of a negative TST result during the preceding 12 months [54].

d. Interpret baseline TST results as outlined in the "Guidelines for Preventing the Transmission of *Mycobacterium tuberculosis* in Health-Care Facilities, 1994" [54].

4. Follow-up (repeat) TST

a. Perform periodic follow-up TSTs on all VDH personnel with negative baseline

TST results who have the potential for exposure to *Mycobacterium tuberculosis* [54].

b. Base the frequency of repeat tuberculin skin testing on the health department's risk assessment, as described in the "Guidelines for Preventing the Transmission of *Mycobacterium tuberculosis* in Health-Care Facilities, 1994" and as provided by federal, state, and local regulations [54].

c. Exempt from follow-up TST, personnel with documented history of a positive baseline TST result or adequate treatment for TB disease or LTBI [54].

d. Consider retesting immunocompromised VDH personnel who have potential for exposure to *Mycobacterium tuberculosis* at least every 6 months [54].

e. Interpret follow-up-PPD test results as outlined in the "Guidelines for Preventing the Transmission of *Mycobacterium tuberculosis* in Health-Care Facilities, 1994" [54].

5. Evaluation and management of PPD-positive personnel

a. Promptly evaluate personnel with newly recognized positive TST results for active disease. Unless the employee has been exposed to TB disease through an identified close contact at home or at another institution, during travel to areas with a high prevalence of TB disease, or any other obvious exposure, it will be presumed that the TST conversion is occupationally acquired [54].

b. Perform chest radiographic examinations on personnel with a positive TST result as part of the evaluation for active TB. If results of the initial chest radiographic examination are negative, do not repeat chest radiograph unless symptoms suggestive of TB develop [54].

c. Periodically remind all personnel, especially those with positive TST results, about the symptoms of TB and the need for prompt evaluation of any pulmonary symptoms suggestive of TB. Supervisory personnel should remain alert for employees with symptoms of active tuberculosis disease and request medical clearance if appropriate [54].

d. Do not require routine annual chest radiographs for asymptomatic, TST workers [54]. If personnel report TB-like symptoms or a recent exposure, a chest x-ray should be done.

6. Therapy for TB infection

a. Offer preventative treatment for latent TB infection to all personnel with positive

TST reactions.

b. Provide therapy to personnel or refer them to their health care provider, as appropriate.

7. Post-exposure management of personnel

a. As soon as possible after an exposure to a person with infectious TB (i.e., exposure to a person with pulmonary or laryngeal TB for whom proper isolation precautions were not implemented), conduct TST testing on personnel who are known to have negative TST results. If the initial postexposure TST result is negative, repeat the 12 weeks after the exposure [54].

b. Do not perform TST tests on personnel with documented previously positive TST results. Do not perform chest radiographs on personnel with previously positive TST results, unless they have symptoms suggestive of active TB [54].

8. Workplace restrictions

a. Exclude personnel with infectious pulmonary or laryngeal TB from the workplace until it has been documented that they are receiving adequate therapy, they have received at least 2 weeks of therapy, they have a favorable clinical response to therapy, and they have three consecutive sputum smears collected on different days with negative results for AFB. After personnel return to work, obtain periodic documentation from their health care provider that effective drug therapy has been maintained for the recommended period and that sputum smear results remain negative for AFB [54] (Table 5).

b. Promptly evaluate for infectiousness those personnel with active TB who discontinue treatment before they are cured. Exclude from duty those who are found to remain infectious until a) adequate treatment is resumed, b) an adequate response to therapy is documented, and c) three consecutive sputum smears collected on different days are negative for AFB [54].

c. Recommend directly observed therapy for all personnel with active TB disease.

d. For personnel with extrapulmonary TB, exclusion from the workplace may not be necessary [54].

e. Do not restrict personnel from their usual work activities if they are receiving preventive therapy because of positive PPD-test results (TB infection), even if they are unable or unwilling to accept or complete a full course of therapy. Instruct them to seek prompt evaluation if symptoms suggestive of TB develop [54].

9. Immunocompromised personnel

    a. Refer personnel who are known to be immunocompromised to their personal health professionals who can individually counsel them regarding their risk for TB disease [54].

    b. At the request of immunocompromised personnel, offer (and document), but do not compel, reasonable accommodations for work settings in which they would have the lowest possible risk for occupational exposure to *Mycobacterium tuberculosis*. Consider the provisions of the Americans With Disabilities Act of 1990 and other federal, state, and local regulations in evaluating these situations [54].

10. Engineering Controls and PPE

    a. Patients suspected of having active tuberculosis should immediately be isolated. Preferably isolation will be a room with adjunct engineering controls such negative pressure, HEPA filtration or ultraviolet lights. Any available engineering controls should be immediately activated when the individual is placed in the room. At a minimum, isolation should occur in a private room with the door closed.

    b. A surgical mask should be placed on the patient when tuberculosis is suspected.

    c. A properly fitting N-95 respirator should be worn by health department personnel who have contact with the patient.

    d. The patient should be supplied with tissues and an appropriate receptacle. They should be educated regarding covering his/her mouth when coughing and the proper disposal of sputum and secretions.

    e. Surfaces contaminated with respiratory secretions should be disinfected with an EPA approved disinfectant.

R. Varicella

1. Administer varicella vaccine to susceptible personnel (i.e. personnel without a reliable history of varicella [59]), especially those that will have contact with patients at high risk for serious complications [4, 59] (Table 1A).

2. Do not perform serologic screening of persons with negative or uncertain history of varicella before administering varicella vaccine to personnel, unless the district health director considers it cost-effective [4, 59].

3. Do not routinely perform postvaccination testing of personnel for antibodies to varicella [4].

4. NO RECOMMENDATION for administering postexposure varicella vaccination for the protection of exposed, susceptible personnel [4]. ***UNRESOLVED ISSUE***

5. In some instances varicella vaccine recipients may develop a rash following vaccination, and thus may potentially transmit varicella infection. Each health district should develop guidelines for personnel who develop a rash after receiving varicella vaccine, and who may have contact with susceptible persons or persons at high risk for serious complications from varicella [4]. These guidelines should include: 1) evaluation of the rash by the district health director, a designee, or the employee's personal physician, and 2) possible exclusion from work until resolution of the rash.

6. Seroconversion after varicella vaccination does not always result in full protection against disease. Therefore, each health district should develop guidelines for management of vaccinated personnel and susceptible personnel who are exposed to natural varicella which may include: a) serologic testing for varicella antibody immediately after VZV exposure; b) retesting 5-6 days later to determine if an anamnestic response is present; and c) possible furlough or reassignment of personnel who do not have detectable varicella antibody. Whether postexposure vaccination protects adults is not known [4].

7. Exclude personnel from work who have onset of varicella until all lesions have dried and crusted [2] (Table 5).

8. Exclude from duty after exposure to varicella personnel who are not known to be immune to varicella (by history or serology), beginning on the tenth day after the first exposure until the 21st day after the last exposure (28th day if VZIG was given) [4] (Table 5).

9. Restrict immunocompetent personnel with localized zoster from the care of high-risk patients until lesions are crusted; allow them to care for other patients with lesions covered [4].

10. Restrict immunocompromised personnel with zoster from contact with patients until their lesions are crusted [4] (Table 5).

11. Restrict susceptible personnel exposed to zoster from patient contact from the tenth day after the first exposure through the 21st day after the last exposure (28th day if VZIG was given) [4] (Table 5).

12. Consider performing serologic screening for immunity to varicella on exposed, vaccinated personnel whose antibody status is not known. If the initial test result is negative, retest 5 to 6 days after exposure to determine whether an immune response occurred.

13. Consider excluding vaccinated personnel from work beginning on the 10th day after the first exposure through the 21st day after the last exposure if they do not have detectable antibodies to varicella, or screen daily for symptoms of varicella [4] (Table 5).

14. Do not routinely give VZIG to exposed susceptible personnel, unless immunosuppressed, HIV infected, or pregnant. If VZIG is given, exclude personnel from duty from the 10th day after the first exposure through the 28th day after the last exposure [4, 59] (Tables 1C and 5).

S. Viral respiratory infections

1. Recommend and offer influenza vaccine annually to all personnel, including pregnant women, before the influenza season, unless otherwise contraindicated [4, 60] (Table 1A).

2. Consider the use of antiviral postexposure prophylaxis for unvaccinated VDH personnel during institutional or community outbreaks of influenza for the duration of influenza activity, or consider giving vaccine to unvaccinated personnel and providing them with antiviral postexposure prophylaxis for 2 weeks after vaccination [2, 60, 61].

3. Consider excluding personnel with acute febrile respiratory infections or with laboratory evidence of epidemiologically significant viruses from the care of high-risk patients (e.g., neonates, young infants, patients with chronic obstructive lung disease, and immunocompromised patients) during community outbreaks of influenza or RSV infections [61] (Table 5).

T. Special Issues

1. Pregnancy

    a. Inform pregnant women and women of childbearing age that if acquired during pregnancy, some infectious diseases (e.g., CMV, hepatitis, herpes simplex, HIV, parvovirus, rubella) may have adverse effects on the fetus, whether the infection is acquired in nonoccupational or occupational environments. Information should be provided about the risk of transmission, and standard and transmission-based precautions appropriate for each infection [2, 62-64] (Table 4).

    b. Do not routinely exclude women only on the basis of their pregnancy or intent to be pregnant from the care of patients with particular infections that have potential to harm the fetus (e.g., CMV, HIV, hepatitis, herpes simplex, parvovirus, rubella, and varicella) [62-64] (Table 4).

2. Emergency-response employees

    Ensure that emergency-response employees are routinely notified of infectious diseases

in patients they have cared for or transported, in accordance with the mandates of the 1990 Ryan White Comprehensive AIDS Resources Emergency Act (Subtitle B 42 USC 300ff-80).

3. Personnel linked to outbreaks of bacterial infection

    a. Perform cultures and organism typing only on personnel who are linked epidemiologically to an increase in bacterial infections caused by a pathogen associated with a carrier state; if culture results are positive, exclude personnel from patient contact until carriage is eradicated or the risk of disease transmission is eliminated.

    b. Do not perform routine surveillance cultures of personnel for bacteria or multidrug-resistant organisms in the absence of a cluster or epidemic of bacterial infections in which personnel are implicated.

    c. Do not exclude personnel from duty who are colonized with bacteria, including multidrug-resistant bacteria, who are not epidemiologically linked to an increase in infections.

4. Latex hypersensitivity (see http://www.osha-slc.gov/SLTC/latexallergy/index.html for more information)

    a. Develop a protocol for

        i. evaluating and managing personnel with suspected or known latex allergy,

        ii. establishing surveillance for latex reactions among health district employees,

        iii. purchasing gloves, and

        iv. measuring the impact of preventive measures. Educational materials and activities should be provided to inform personnel about appropriate glove use and the manifestations and potential risk of latex allergy [8, 65].

    b. Glove purchasers should review information on the barrier effectiveness of gloves and consider worker acceptance (e.g., comfort and fit) when selecting gloves for use in the health care organization [8, 65-68].

    c. To facilitate the appropriate selection of gloves, health district clinics should

maintain a list of all gloves used in the clinics according to whether they do or do not contain latex.

d. Evaluate personnel with symptoms suggestive of latex allergy (e.g., localized dermatitis and workplace-related asthma). Use serologic tests only for those who, on the basis of this evaluation, have suspected latex allergy.

e. Adopt policies according to the NIOSH recommendations below to protect workers from latex exposure and allergy in the workplace.

i. Provide workers with non-latex gloves to use when there is little potential for contact with infectious materials.

ii. Appropriate barrier protection is necessary when handling infectious materials [CDC 1987]. If latex gloves are chosen, provide reduced protein, powder-free gloves to protect workers from infectious materials. (The goal of this recommendation is to reduce exposure to allergy-causing proteins (antigens). Until well accepted standardized tests are available, total protein serves as a useful indicator of the exposure of concern.)

iii. Ensure that workers use good housekeeping practices to remove latex-containing dust from the workplace:

- Identify areas contaminated with latex dust for frequent cleaning (upholstery, carpets, ventilation ducts, and plenums).

- Ensure that workers change ventilation filters and vacuum bags frequently in latex-contaminated areas.

iv. Provide workers with education programs and training materials about latex allergy.

v. Periodically screen high-risk workers for latex allergy symptoms. Detecting symptoms early and removing symptomatic workers from latex exposure are essential for preventing long-term health effects.

vi. Evaluate current prevention strategies whenever a worker is diagnosed with latex allergy.

Tables

Table 1A - Immunobiologics and Schedules for Health Care Personnel: Immunizing Agents STRONGLY RECOMMENDED FOR HEALTH CARE PERSONNEL. *(Modified from ACIP Recommendations).*

Generic	Primary booster dose schedule	Indications	Major precautions and contraindications	Special considerations
Hepatitis B recombinant vaccine	Two doses IM in the deltoid muscle 4 wk apart; 3rd dose 5 mo after 2nd; booster doses not necessary	Health care personnel at risk of exposure to blood and body fluids	No apparent adverse effects to developing fetuses, not contraindicated in pregnancy; history of anaphylactic reaction to common baker's yeast	No therapeutic or adverse effects on HBV-infected persons; cost-effectiveness of prevaccination screening for susceptibility to HBV depends on costs of vaccination and antibody testing and prevalence of immunity in the group of potential vaccinees; health care personnel who have ongoing contact with patients or blood should be tested 1-2 mo after completing the vaccination series to determine serologic response
Influenza vaccine (inactivated whole or split virus)	Annual single-dose vaccination IM with current (either whole- or split-virus) vaccine	Health care personnel with contact with high-risk patients or working in chronic care facilities; personnel with high-risk medical conditions and/or ≥65 yr	History of anaphylactic hypersensitivity after egg ingestion	No evidence of maternal or fetal risk when vaccine was given to pregnant women with underlying conditions that render them at high risk for serious influenza complications.
Measles live-virus vaccine	One dose SC; 2nd dose at least 1 mo later	Health care personnel born in or after 1957 without documentation of (a) receipt of two doses of live vaccine on or after their 1st birthday, (b) laboratory evidence of immunity; vaccine should be considered for all personnel, including those born before 1957, who have no proof of immunity	Pregnancy; immuno-compromised* state; (including HIV-infected persons with severe immunosuppression) history of anaphylactic reactions after gelatin ingestion or receipt of neomycin; or recent receipt of immune globulin	MMR is the vaccine of choice if recipients are also likely to be susceptible to rubella and/or mumps; persons vaccinated between 1963 and 1967 with (a) a killed measles vaccine alone, (b) killed vaccine followed by live vaccine, or (c) a vaccine of unknown type should be revaccinated with two doses of live measles vaccine
Mumps live-virus vaccine	One dose SC; no booster	Health care personnel believed to be susceptible can be vaccinated; adults born before 1957 can be considered immune	Pregnancy; immuno-compromised* state; history of anaphylactic reaction after gelatin ingestion or receipt of neomycin	MMR is the vaccine of choice if recipients are also likely to be susceptible to measles and rubella
Rubella live-virus vaccine	One dose SC; no booster	Health care personnel, both male and female, who lack documentation of receipt of live vaccine on or after their 1st birthday, or of laboratory evidence of immunity; adults born before 1957 can be considered immune, except women of childbearing age	Pregnancy; immuno-compromised* state; history of anaphylactic reaction after receipt of neomycin	Women pregnant when vaccinated or who become pregnant within 3 mo of vaccination should be counseled on the theoretic risks to the fetus, the risk of rubella vaccine associated malformations in these women is negligible; MMR is the vaccine of choice if recipients are also likely to be susceptible to measles or mumps
Varicella-zoster live-virus vaccine	Two 0.5 ml doses SC, 4-8 wk apart if ≥13 yr	Health care personnel with-out reliable history of varicella or laboratory evidence of varicella immunity	Pregnancy, immuno-compromised* state, history of anaphylactic reaction after receipt of neomycin or gelatin; salicylate use should be avoided for 6 wk after vaccination	Because 71%-93% of persons without a history of varicella are immune, serologic testing before vaccination may be cost-effective

IM, Intramuscularly; *SC*, subcutaneously.
*Persons immunocompromised because of immune deficiencies, HIV infection, leukemia, lymphoma, generalized malignancy, or immunosuppressive therapy with corticosteroids, alkylating drugs, antimetabolites, or radiation

Table 1B - Immunobiologics and Schedules for Health Care Personnel: Other Immunizing Agents Available for Health Care Personnel in Special Circumstances. *(Modified from ACIP Recommendations).*

Generic	Primary booster dose schedule	Indications	Major precautions and Contraindications	Special considerations
BCG vaccine (for tuberculosis)	One percutaneous dose of 0.3 ml; no booster dose recommended	Health care personnel in communities where (a) MDR-TB is prevalent, (b) strong likelihood of infection exists, and (c) full implementation of TB infection control precautions has been inadequate in controlling the spread of infection *(NOTE: BCG should be used after consultation with local and/or state health department)*	Immunocompromised* state and pregnancy	In the United States, TB control efforts are directed toward early identification and treatment of cases of active TB and toward preventive therapy with isoniazid for PPD converters
Hepatitis A vaccine	Two doses of vaccine IM, either (HAVRIX™) 6-12 mo apart or (VAQTA™) 6 mo apart	Not routinely indicated for U.S. health care personnel; persons who work with HAV-infected primates or with HAV in a laboratory setting should be vaccinated	History of anaphylactic reaction to alum or the preservative 2-phenoxy ethanol; vaccine safety in pregnant women has not been evaluated, risk to fetus is likely low and should be weighed against the risk of hepatitis A in women at high risk	Health care personnel who travel internationally to endemic areas should be evaluated for vaccination
Meningococcal polysaccharide (quadrivalent A, C, W135, and Y) vaccine	One dose in volume and by route specified by manufacturer; need for boosters is unknown	Not routinely indicated for health care workers in the United States	Vaccine safety in pregnant women has not been evaluated; vaccine should not be given during pregnancy unless risk of infection is high	May be useful in certain out-break situations (see text)
Polio vaccine	IPV, two doses SC given 4-8 wk apart followed by 3rd dose 6-12 mo after 2nd dose; booster doses may be IPV or OPV	Health care personnel in close contact with persons who may be excreting wild virus and laboratory personnel handling specimens that may contain wild poliovirus	History of anaphylactic reaction after receipt of streptomycin or neomycin; because safety of vaccine has not been evaluated in pregnant women, it should not be given during pregnancy	Use only IPV for immunosuppressed persons or personnel who care for immunosuppressed patients; if immediate protection against poliomyelitis is needed, OPV should be used.
Rabies vaccine	Primary, HDCV, PCEC, or RVA, IM, 1.0 ml (deltoid area) one each on days 0, 7, and 21 or 28, or HDCV, ID, 0.1 ml, one each on days 0, 7,and 21or 28; booster, HDCV, PCEC, or RVA, IM, 1.0 ml (deltoid area), day 0 only, or HDCV, ID, 0.1 ml, day 0 only	Personnel who work with rabies virus or infected animals in diagnostic or research activities		The frequency of booster doses should be based on frequency of exposure. See CDC reference for Rabies Prevention for postexposure recommendations.
Tetanus and diphtheria (Td)	Two doses IM 4 wk apart; 3rd dose 6-12 mo after 2nd dose; booster every 10 yr	All adults; tetanus prophylaxis in wound management	First trimester of pregnancy; history of a neurologic reaction or immediate hypersensitivity reaction; individuals with severe local (Arthus-type) reaction after previous dose of Td vaccine should not be given further routine or emergency doses of Td for 10 yr	

Continued

HDCV, Human diploid cell rabies vaccine; *RVA*, rabies vaccine absorbed; *IPV*, inactivated poliovirus vaccine; *OPV*, oral poliovirus vaccine; *ID*, intradermally.
*Persons immunocompromised because of immune deficiencies, HIV infection, leukemia, lymphoma, generalized malignancy, or immunosuppressive therapy with corticosteroids, alkylating drugs, antimetabolites, or radiation.

Table 1B - Continued

Generic	Primary booster dose schedule	Indications	Major precautions and Contraindications	Special considerations
Typhoid vaccines:IM, SC, and oral	One 0.5 ml dose IM; booster doses of 0.5 ml every 2 yr; (Vi capsular polysaccharide) or two 0.5 ml doses SC, 4 or more wk apart; boosters of 0.5 ml SC or 0.1 ml ID every 3 yr if exposure continues or four oral doses on alternate days; (Ty21a) vaccine manufacturer's recommendation is revaccination with the entire four-dose series every 5 yr	Personnel in laboratories who frequently work with *Salmonella typhi*	History of severe local or systemic reaction to a previous dose of typhoid vaccine; Ty21a vaccine should not be given to immunocompromised* personnel	Vaccination should not be considered as an alternative to the use of proper procedures when handling specimens and cultures in the laboratory
Vaccinia vaccine (smallpox)	One dose administered with a bifurcated needle; boosters every 10 yr	Personnel who directly handle cultures of or animals contaminated with recombinant vaccinia viruses or orthopox viruses (monkey-pox, cowpox, vaccinia, etc.) that infect human beings	Pregnancy, presence or history of eczema, or immunocompromised* status in potential vaccinees or in their household contacts	Vaccination may be considered for health care personnel who have direct contact with contaminated dressings or other infectious material from volunteers in clinical studies involving recombinant vaccinia virus

Table 1C - Immunobiologics and Schedules for Health Care Personnel: Diseases for Which Postexposure Prophylaxis May Be Indicated for Health Care Personnel. *(Modified from ACIP Recommendations).*

Generic	Primary booster dose schedule	Indications	Major precautions and contraindications	Special considerations
Diphtheria	Benzathine penicillin, 1.2mU IM, single dose, or erythromycin (1 gm/day) PO x 7 days	For health care personnel exposed to diphtheria or identified as carriers		Also administer one dose Td to previously immunized if no Td has been given in 5 yrs
Hepatitis A	One IM dose IG 0.02 ml/kg given within 2 wk of exposure in large muscle mass (deltoid, gluteal)	May be indicated for health care personnel exposed to feces of infected persons during outbreaks	Persons with IgA deficiency; do not administer within 2 wk after MMR or within 3 wk after varicella vaccine	
Hepatitis B	HBIG 0.06 ml/kg IM as soon as possible (and within 7 days) after exposure (with dose 1 of hepatitis B vaccine given at different body site); if hepatitis B series has not been started, 2nd dose of HBIG should be given 1 mo after 1st	HBV-susceptible health care personnel with percutaneous or mucous-membrane exposure to blood known to be HBsAg seropositive (see Table 5)		
Meningococcal disease	Rifampin, 600 mg PO every 12 hours for 2 days, or ceftriaxone, 250 mg IM, single dose, or ciprofloxacin, 500 mg PO, single dose	Personnel with direct contact with respiratory secretions from infected persons without the use of proper precautions (e.g., mouth-to-mouth resuscitation, endotracheal intubation, endotracheal tube management, or close examination of oropharynx)	Rifampin and ciprofloxacin not recommended during pregnancy	
Pertussis	Erythromycin, 500 mg qid PO, or trimetho-prim-sulfamethoxazole, 1 tablet bid PO, for 14 days after exposure	Personnel with direct contact with respiratory secretions or large aerosol droplets from respiratory tract of infected persons.		
Rabies	For those never vaccinated: RIG-administer 20 IU/kg body weight. If anatomically feasible, **the full dose** should be infiltrated around the wound(s) and any remaining volume should be administered IM at an anatomical site distant from vaccine administration. Also, RIG should not be administered in the same syringe as vaccine. Because RIG might partially suppress active production of antibody, no more than recommended dose should be given. VACCINE - HDCV, RVA, or PCEC 1.0 mL, IM (deltoid area), one each on days 0,3,7,14 and 28.	Personnel who have been bitten by human being or animal with rabies or have had scratches, abrasions, open wounds, or mucous membranes contaminated with saliva or other potentially infective material (e.g., brain tissue)		Personnel who have previously been vaccinated-RIG:RIG should **not** be administered. Vaccine: HDCV, RVA, or PCEC 1.0 mL, IM (deltoid area), one each on days 0 and 3

Continued

PO, Orally; *Td*, tetanus-diphtheria toxoid; *IG*, immunoglobulin A; *qid*, four times daily; *bid*, twice daily; *HRIG*, human rabies immunoglobulin; *HDCV*, human diploid cell rabies vaccine; *RVA* rabies vaccine absorbed.
*Persons immunocompromised because of immune deficiencies, HIV infection, leukemia, lymphoma, generalized malignancy, or immunosuppressive therapy

with corticosteroids, alkylating drugs, antimetabolites, or radiation.

Table 1C - Continued

Generic	Primary booster dose schedule	Indications	Major precautions and contraindications	Special considerations
Varicella-zoster virus	VZIG for persons 50 kg: 125 U/10kg IM; for per-sons >50 kg: 625 U†	Personnel known or likely to be susceptible to varicella and who have close and prolonged exposure to an infectious health care worker or patient, particularly those at high risk for complications, such as pregnant or immunocompromised persons		Serologic testing may help in assessing whether to administer VZIG; if varicella is prevented by the use of VZIG, vaccine should be offered later

†Some persons have recommended 125 U/10kg regardless of total body weight.

Table 2 - Summary of ACIP Recommendations on Immunization of Health Care Workers with Special Conditions *(Modified from ACIP Recommendation)*

Vaccine	Pregnancy	HIV Infection	Severe immunosuppression*	Asplenia	Renal failure	Diabetes	Alcoholism & alcoholic cirrhosis
BCG	UI	C	C	UI	UI	UI	UI
Hepatitis A	UI	UI	UI	UI	UI	UI	R†
Hepatitis B	R	R	R	R	R	R	R
Influenza	R‡	R	R	R	R	R	R
Measles, mumps, rubella	C	R§	C	R	R	R	R
Meningococcus	UI	UI	UI	R†	UI	UI	UI
Polio, IPV II	UI	UI	UI	UI	UI	UI	UI
Polio, OPV II	UI	C	C	UI	UI	UI	UI
Pneumococcus†	UI	R	R	R	R	R	R
Rabies	UI	UI	UI	UI	UI	UI	UI
Tetanus/diphtheria†	R	R	R	R	R	R	R
Typhoid, inactivated & V_1††	UI	UI	UI	UI	UI	UI	UI
Typhoid, Ty21a	UI	C	C	UI	UI	UI	UI
Varicella	C	C	C	R	R	R	R
Vaccinia	UI	C	C	UI	UI	UI	UI

UI, Use if indicated; *C,* contraindicated; *R*, recommended.
*Severe immunosuppression can be the result of congenital immunodeficiency, leukemia, lymphoma, generalized malignancy or therapy with alkylating agents,antimetabolites, radiation, or large amounts of corticosteroids.
†Recommendation is based on the person's underlying condition rather than occupation.
‡Women who will be in the second or third trimester of pregnancy during influenza season.
§Contraindicated in persons with HIV infection and severe immunosuppression; see text.
||Vaccination is recommended for unvaccinated health care workers who have close contact with patients who may be excreting wild polioviruses. Primary vaccination with IPV is recommended because the risk for vaccine-associated paralysis after administration of OPV is higher among adults than among children. Health care workers who have had a primary series of OPV or IPV who are directly involved with the provision of care to patients who may be excreting poliovirus may receive another dose of either IPV or OPV. Any suspected case of poliomyelitis should be investigated immediately. If evidence suggests transmission of wild poliovirus, control measures to contain further transmission should be instituted immediately, including an OPV vaccination campaign.
†† Capsular p

Table 3 - Recommendation for Postexposure Prophylaxis for Percutaneous or Permucosal Exposure to Hepatitis B Virus, United States.

Vaccination and antibody status of exposed person	HBsAg seropositive	Treatment when source is HBsAg negative	Treatment when source is not tested or status is unknown
Unvaccinated	HBIG* x 1 and initiate HB vaccine series	Initiate HB vaccine series	Initiate HB
Previously vaccinated			
Known responder†	No treatment	No treatment	No Treatment
Known nonresponder	HBIG* x 2 or HBIG* x 1 and initiate revaccination	No treatment	If known high-risk source, treat as if source were HBsAg positive
Antibody response unknown	Test exposed person for anti-HBs:	No treatment	Test exposed person for anti-HBs:
	(1) if adequate,† no treatment;		(1) if adequate,† no treatment;
	(2) if inadequate,† HBIG x 1 and vaccine booster		(2) if inadequate,† initiate revaccination

HBsAg, Hepatitis B surface antigen; *HBIG*, hepatitis B immune globulin; *HB*, hepatitis vaccine; *anti-HBs*, antibody to hepatitis B surface antigen.
*Dose 0.06 mg/kg IM.
†Responder is defined as a person with adequate serum levels of anti-HBs (10 mIU/ml); inadequate vaccination defined as serum anti-HBs <10 mIU/ml.

Table 4 - Pregnant Health Care Personnel: Pertinent Facts to Guide Management of Occupational Exposures to Infectious Agents.

Agent	Potential effect on fetus	Rate of perinatal transmission	Maternal Screening	Prevention
1. Cytomegalovirus	Hearing loss; congenital syndrome*	15% after primary maternal infection; symptomatic 5%	Antibody provides some but not complete protection against clinical disease; routine screening not recommended	Standard precautions
2. Hepatitis B	Hepatitis; development of chronic infection in infant	HBeAg seropositive 90%; HBeAg negative 0-25%	HBsAG routine screening recommended	Vaccine and HBIG to infant; standard precautions
3. Hepatitis C	Hepatitis	2%-5%	Anti-HCV; HCV RNA in ref-erence labs; routine screeningnot recommended	Standard precautions
4. Herpes simplex	Mucocutaneous lesions,sepsis, encephalitis; con-genital malformations (rare)	Unlikely from nosocomial exposure; primary 33%-50%, recurrent 4%	Antibody testing not useful; inspection for lesions at delivery	Standard precautions
5. Human immunodeficiency virus	AIDS by 2-3 yr	8%-30%	Antibody by enzyme immunoassay, Western blot	Avoid high-risk behaviors; consider postexposure prophylaxis after high-risk needlestick exposure; intrapartum and postnatal zidovudine for HIV-seropositive mothers and their babies; standard precautions
6. Influenza	Inconsistent	Rare	None	Vaccine (safe during pregnancy); droplet precautions
7. Measles	Prematurity; abortion	Rare	History, antibody	Vaccine†; airborne precautions
8. Parvovirus B19	Hydrops, stillbirth	Rare, 3%-9% maximum adverse outcome	IgM and IgG antibody prepregnancy; antibody protective	Droplet precautions
9. Rubella	Congenital syndrome*	45%-50% overall; 90% in 1st 12 wk	Antibody	Vaccine†; droplet precautions for acute infection; contact precautions for congenital rubella
10. Tuberculosis	Hepatomegaly, pulmonary, CNS	Rare	Skin test	Isoniazid ± ethambutol for disease; airborne precautions
11. Varicella-zoster	Malformations (skin, limb, CNS, eye); chickenpox	Total 25%; congenital syndrome (0-4%)	Antibody	Vaccine†; VZIG within 96 hours of exposure if susceptible; airborne and contact precautions

Modified from Siegel JD. Risk and exposure for the pregnant health-care worker. In: Olmstead RN, editor. APIC infection control and applied epidemiology: principles and practices. St Louis: Mosby; 1996. p. 22-2-22-3 (table 22-1). *HBeAg*, Hepatitis B e antigen; *CNS*, central nervous system.
*Congenital syndrome: varying combinations of jaundice, hepatosplenomegaly, microcephaly, CNS abnormalities, thrombocytopenia, anemia, retinopathy, and skin and bone lesions.

†Live-virus vaccines are given routinely before pregnancy.

Table 5 - Summary of Suggested Work Restrictions for Health Care Personnel Exposed to or Infected with Infectious Diseases of Importance in Health Care Settings *(Modified from ACIP Recommendations).*

Disease/problem	Work restriction	Duration
Conjunctivitis	Restrict from patient contact and contact with the patient's environment	Until discharge ceases
Cytomegalovirus infections	No restriction	
Diarrheal diseases		
Acute stage (diarrhea with other symptoms)	Restrict from patient contact, contact with the patient's environment, or food handling	Until symptoms resolve
Convalescent stage, *Salmonella* spp.	Restrict from care of high-risk patients	Until symptoms resolve; consult with local and state health authorities regarding need for negative stool cultures
Diphtheria	Exclude from duty	Until antimicrobial therapy completed and 2 cultures obtained 24 hours apart are negative
Enteroviral infections	Restrict from care of infants, neonates, and immunocompromised patients and their environments	Until symptoms resolve
Hepatitis A	Restrict from patient contact, contact with patient's environment, and food handling	Until 7 days after onset of jaundice
Hepatitis B		
Personnel with acute or chronic hepatitis B surface antigemia who do not perform exposure-prone procedures	No restriction*; refer to state regulations; standard precautions should always be observed	
Personnel with acute or chronic hepatitis B e antigenemia who perform exposure-prone procedures	Do not perform exposure-prone invasive procedures until counsel from an expert review panel has been sought; panel should review and recommend procedures the worker can perform, taking into account specific procedure as well as skill and technique of worker; refer to state regulations	Until hepatitis B e antigen is negative
Hepatitis C	No recommendation	
Herpes simplex		
Genital	No restriction	
Hands (herpetic whitlow)	Restrict from patient contact and contact with the patient's environment	Until lesions heal
Orofacial	Evaluate for need to restrict from care of high-risk patients	
Human immunodeficiency virus	Do not perform exposure-prone invasive procedures until counsel from an expert review panel has been sought; panel should review and recommend procedures the worker can perform, taking into account specific procedure as well as skill and technique of the worker; standard precautions should always be observed; refer to state regulations	

Continued

Table 5 - Continued

Disease/problem	Work restriction	Duration
Measles		
Active	Exclude from duty	Until 7 days after the rash appears
Postexposure (susceptible personnel)	Exclude from duty	From 5th day after 1st exposure through 21st day after last exposure and/or 4 days after rash appears
Meningococcal infections	Exclude from duty	Until 24 hours after start of effective therapy
Mumps		
Active	Exclude from duty	Until 9 days after onset of parotitis
Postexposure (susceptible Personnel)	Exclude from duty	From 12th day after 1st exposure through 26th day after last exposure or until 9 days after onset of parotitis
Pediculosis	Restrict from patient contact	Until treated and observed to be free of adult and immature lice
Pertussis		
Active	Exclude from duty	From beginning of catarrhal stage through 3rd wk after onset of paroxysms or until 5 days after start of effective antimicrobial therapy
Postexposure (asymptomatic personnel)	No restriction, prophylaxis recommended	
Postexposure (symptomatic personnel)	Exclude from duty	Until 5 days after start of effective antimicrobial therapy
Rubella		
Active	Exclude from duty	Until 5 days after rash appears
Postexposure (susceptible personnel)	Exclude from duty	From 7th day after 1st exposure through 21st day after last exposure
Scabies	Restrict from patient contact	Until cleared by medical evaluation
Staphylococcus aureus infection		
Active, draining skin lesions	Restrict from contact with patients and patient's environment or food handling	Until lesions have resolved
Carrier state	No restriction, unless personnel are epidemiologically linked to transmission of the organism	
Streptococcal infection, group A	Restrict from patient care, contact with patient's environment, or food handling	Until 24 hours after adequate treatment started
Tuberculosis		
Active disease	Exclude from duty	
PPD converter	No restriction	Until proved noninfectious

Continued

* Unless epidemiologically linked to transmission of infection

Table 5 – Continued

Disease/problem	Work restriction	Duration
Varicella		
Active	Exclude from duty	Until all lesions dry and crust
Postexposure (susceptible personnel)	Exclude from duty	From 10th day after 1st exposure through 21st day (28th day if VZIG given) after last exposure
Zoster		
Localized, in healthy person	Cover lesions; restrict from care of high-risk patients†	Until all lesions dry and crust
Generalized or localized in immunosuppressed person	Restrict from patient contact	Until all lesions dry and crust
Postexposure (Susceptible personnel)	Restrict from patient contact	From 10th day after 1st exposure through 21st day (28th day if VZIG given) after last exposure or, if varicella occurs, until all lesions dry and crust
Viral respiratory infections, acute febrile	Consider excluding from the care of high risk patients‡ or contact with their environment during community outbreak of RSV and influenza	Until acute symptoms resolve

† Those susceptible to varicella and who are at increased risk of complications of varicella, such as neonates and immunocompromised persons of any age.
‡ High-risk patients as defined by the ACIP for complications of influenza.

Appendices

Appendix 1. Generic List of VDH Job Classes Where Employees Have Potential Occupational Exposure to Blood or Other Potentially Infectious Materials.

Job Classes Where All Employees Have Exposure	**Task Groups That Involve Potential Exposure**
Analytical Chemist	Blood & body fluid analysis
Asst. Chief Medical Examiner	Postmortem examinations
Autopsy Technician Sr.	Postmortem examinations
Certified Nurse Practitioner A & B	Client examinations, blood & body fluid specimen collection
Chief Medical Examiner	Postmortem examinations
Health Counselor	Client examinations, blood & body fluid specimen collection
Human Services Program Consultant, Specialist, Supervisor	Client examinations, blood & body fluid specimen collection, vaccine administration
Human Services Program Coordinators & Director	Blood & body fluid specimen collection
Laboratory Aide	Blood & body fluid specimen handling, contaminated equipment handling
Laboratory Specialist & Advanced	Blood & body fluid specimen collection, blood & body fluid analysis
Laboratory Technician & Sr.	Blood & body fluid specimen collection, blood & body fluid analysis, contaminated equipment handling
Medical Program Director	Blood & body fluid specimen collection
Medical Technologist, Sr., Supervisor, & Mgr.	Blood & body fluid specimen collection, blood & body fluid analysis, contaminated equipment handling
Microbiologist & Asst.	Blood & body fluid specimen handling and analysis, contaminated equipment handling

Job Classes Where All Employees Have Exposure	**Task Groups That Involve Potential Exposure**
Nursing Assistant	Blood & body fluid specimen handling, wound care
Nutritionist & Asst.	Blood specimen collection
Practical Nurse A	Handling of lab specimens, wound care
Public Health Physician, Specialist & Supervisor	Client examinations, blood & body fluid specimen collection, vaccine administration
Public Health Nurse, Consultant, Coordinator, Sr., Supervisor, Manager, Manager Sr.	Client examinations, blood & body fluid specimen collection, vaccine administration
Public Health District Director, M.D.	Client examinations, blood & body fluid specimen collection, vaccine administration
Public Health Veterinarian	Blood & body fluid specimen collection & handling
Public Health Dentists, Assts., & Hygentists	Clients examinations, blood & body fluid contact
TB Outreach Worker	Blood & body fluid specimen collection, PPD administration

Job Classes Where Some Employees Have Exposure	**Task Groups That Involve Potential Exposure**
Environmental Health Specialist, Sr., Supr. & Mgr	Collection and handling of lab specimens (rabies)
Epidemiologists	Collection and handling of lab specimens; outbreak investigation
Executive Secretary & Sr.	Handling of lab specimens
Housekeeping Worker/Maintenance	Waste collection and disposal (trash and biohazard)
Office Services Aide, Asst., Specialist, Supervisor, Supervisor Sr.	Handling of lab specimens
Secretary, Sr., Executive	Handling of lab specimens

Appendix 2. Health History and Immunization Inventory

Employee's name (last):_____ (first): _____ Social Security Number : ____-____ -_____
Position title and location: _____ Supervisor:_____
Home address: _____
Home phone number: _____ Birthdate: _____ Sex: M F
Emergency Contact_____ Phone Number: _____

Present Health Status
Any present illness? Y _____ N _____ If yes, describe: _____
Any chronic illness? Y _____ N _____ If yes, describe: _____
Foreign Travel? Y _____ N _____ If yes, describe: _____
Current medications: _____

Past Medical History
Please indicate below if you have had any of the following medical conditions by circling Y (Yes) or N (No) for each condition. If Yes, please provide the year when the condition occurred or was diagnosed.

Medical Condition			Year/Details
Mumps?	Y	N	_____
Chickenpox?	Y	N	_____
Rubeola?	Y	N	_____
Rubella?	Y	N	_____
Hepatitis B?	Y	N	_____
Hepatitis C?	Y	N	_____
Tuberculosis?	Y	N	_____ INH _____
Dermatitis?	Y	N	_____
Immune disorder?	Y	N	_____
Other?			_____

Immunization History
Please indicate the dates you received these immunizations. If you are unsure, please put a question mark in the date section.

Immunization			Date
Polio?	Y	N	_____
Measles?	Y	N	_____
Mumps?	Y	N	_____
Rubella?	Y	N	_____
Hepatitis B?	Y	N	_____
BCG (for TB)?	Y	N	_____
Td toxoid?	Y	N	_____
Chicken pox?	Y	N	_____
Smallpox Vaccine?	Y	N	_____

Tuberculosis Screening
TB Risk Assessment performed: Y N Risks Identified: Y N
Last documented TST: Date placed: _____ Date read: _____ Induration: _____ mm
First Test: Date placed: _____ Date read: _____ Induration: _____ mm
Second Test: Date placed: _____ Date read: _____ Induration: _____ mm
If previously positive PPD: last chest x-ray date: _____ Results: _____
INH: date/duration:
N-95 Fit-testing performed: Y N Type: Size:

Employee Signature: _____ Date: _____
Public Health Clinician's Assessment/Recommendations:

Clinician's Signature: _____ Date: _____

Appendix 3. Bloodborne Pathogens Standards

Regulations (Standards - 29 CFR)

Bloodborne pathogens. - 1910.1030

Regulations (Standards - 29 CFR) - Table of Contents

- **Part Number:** 1910
- **Part Title:** Occupational Safety and Health Standards
- **Subpart:** Z
- **Subpart Title:** Toxic and Hazardous Substances
- **Standard Number:** 1910.1030
- **Title:** Bloodborne pathogens.

- **Appendix:** A

1910.1030(a)

Scope and Application. This section applies to all occupational exposure to blood or other potentially infectious materials as defined by paragraph (b) of this section.

1910.1030(b)

Definitions. For purposes of this section, the following shall apply:

Assistant Secretary means the Assistant Secretary of Labor for Occupational Safety and Health, or designated representative.

Blood means human blood, human blood components, and products made from human blood.

Bloodborne Pathogens means pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus (HBV) and human immunodeficiency virus (HIV).

Clinical Laboratory means a workplace where diagnostic or other screening procedures are performed on blood or other potentially infectious materials.

Contaminated means the presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface.

Contaminated Laundry means laundry which has been soiled with blood or other potentially infectious materials or may contain sharps.

Contaminated Sharps means any contaminated object that can penetrate the skin including, but not limited to, needles, scalpels, broken glass, broken capillary tubes, and exposed ends of dental wires.

Decontamination means the use of physical or chemical means to remove, inactivate, or destroy bloodborne pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particles and the surface or item is rendered safe for handling, use, or disposal.

Director means the Director of the National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services, or designated representative.

Engineering Controls means controls (e.g., sharps disposal containers, self-sheathing needles, safer medical devices, such as sharps with engineered sharps injury protections and needleless systems) that isolate or remove the bloodborne pathogens hazard from the workplace.

Exposure Incident means a specific eye, mouth, other mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious materials that results from the performance of an employee's duties.

Handwashing Facilities means a facility providing an adequate supply of running potable water, soap and single use towels or hot air drying machines.

Licensed Healthcare Professional is a person whose legally permitted scope of practice allows him or her to independently perform the activities required by paragraph (f) Hepatitis B Vaccination and Post-exposure Evaluation and Follow-up.

HBV means hepatitis B virus.

HIV means human immunodeficiency virus.

Needleless systems means a device that does not use needles for:

(1) The collection of bodily fluids or withdrawal of body fluids after initial venous or arterial access is established; (2) The administration of medication or fluids; or (3) Any other procedure involving the potential for occupational exposure to bloodborne pathogens due to percutaneous injuries from contaminated sharps.

Occupational Exposure means reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties.

Other Potentially Infectious Materials means (1) The following human body fluids: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, any body fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids; (2) Any unfixed tissue or organ (other than intact skin) from a human (living or dead); and (3) HIV-containing cell or tissue cultures, organ cultures, and HIV- or HBV-containing culture medium or other solutions; and blood, organs, or other tissues from experimental animals infected with HIV or HBV.

Parenteral means piercing mucous membranes or the skin barrier through such events as needlesticks, human bites, cuts, and abrasions.

Personal Protective Equipment is specialized clothing or equipment worn by an employee for protection against a hazard. General work clothes (e.g., uniforms, pants, shirts or blouses) not intended to function as protection against a hazard are not considered to be personal protective equipment.

Production Facility means a facility engaged in industrial-scale, large-volume or high concentration production of HIV or HBV.

Regulated Waste means liquid or semi-liquid blood or other potentially infectious materials; contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed; items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling; contaminated sharps; and pathological and microbiological wastes containing blood or other potentially infectious materials.

Research Laboratory means a laboratory producing or using research-laboratory-scale amounts of HIV or HBV. Research laboratories may produce high concentrations of HIV or HBV but not in the volume found in production facilities.

Sharps with engineered sharps injury protections means a nonneedle sharp or a needle device used for withdrawing body fluids, accessing a vein or artery, or administering medications or other fluids, with a built-in safety feature or mechanism that effectively reduces the risk of an exposure incident.

Source Individual means any individual, living or dead, whose blood or other potentially infectious materials may be a source of occupational exposure to the employee. Examples include, but are not limited to, hospital and clinic patients; clients in institutions for the developmentally disabled; trauma victims; clients of drug and alcohol treatment facilities; residents of hospices and nursing homes; human remains; and individuals who donate or sell blood or blood components.

Sterilize means the use of a physical or chemical procedure to destroy all microbial life including highly resistant bacterial endospores.

Universal Precautions is an approach to infection control. According to the concept of Universal Precautions, all human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV, and other bloodborne pathogens.

Work Practice Controls means controls that reduce the likelihood of exposure by altering the manner in which a task is performed (e.g., prohibiting recapping of needles by a two-handed technique).

1910.1030(c)

Exposure Control --

1910.1030(c)(1)

Exposure Control Plan.

1910.1030(c)(1)(i)

Each employer having an employee(s) with occupational exposure as defined by paragraph (b) of this section shall establish a written Exposure Control Plan designed to eliminate or minimize employee exposure.

1910.1030(c)(1)(ii)

The Exposure Control Plan shall contain at least the following elements:

1910.1030(c)(1)(ii)(A)

The exposure determination required by paragraph (c)(2),

..1910.1030(c)(1)(ii)(B)

1910.1030(c)(1)(ii)(B)

The schedule and method of implementation for paragraphs (d) Methods of Compliance, (e) HIV and HBV Research Laboratories and Production Facilities, (f) Hepatitis B Vaccination and Post-Exposure Evaluation and Follow-up, (g) Communication of Hazards to Employees, and (h) Recordkeeping, of this standard, and

1910.1030(c)(1)(ii)(C)

The procedure for the evaluation of circumstances surrounding exposure incidents as required by paragraph (f)(3)(i) of this standard.

1910.1030(c)(1)(iii)

Each employer shall ensure that a copy of the Exposure Control Plan is accessible to

employees in accordance with 29 CFR 1910.1020(e).

1910.1030(c)(1)(iv)

The Exposure Control Plan shall be reviewed and updated at least annually and whenever necessary to reflect new or modified tasks and procedures which affect occupational exposure and to reflect new or revised employee positions with occupational exposure. The review and update of such plans shall also:

1910.1030(c)(1)(iv)(A)

Reflect changes in technology that eliminate or reduce exposure to bloodborne pathogens; and

1910.1030(c)(1)(iv)(B)

Document annually consideration and implementation of appropriate commercially available and effective safer medical devices designed to eliminate or minimize occupational exposure.

1910.1030(c)(1)(v)

An employer, who is required to establish an Exposure Control Plan shall solicit input from non-managerial employees responsible for direct patient care who are potentially exposed to injuries from contaminated sharps in the identification, evaluation, and selection of effective engineering and work practice controls and shall document the solicitation in the Exposure Control Plan.

1910.1030(c)(1)(vi)

The Exposure Control Plan shall be made available to the Assistant Secretary and the Director upon request for examination and copying.

1910.1030(c)(2)

Exposure Determination.

1910.1030(c)(2)(i)

Each employer who has an employee(s) with occupational exposure as defined by paragraph (b) of this section shall prepare an exposure determination. This exposure determination shall contain the following:

1910.1030(c)(2)(i)(A)

A list of all job classifications in which all employees in those job classifications have occupational exposure;

..1910.1030(c)(2)(i)(B)

1910.1030(c)(2)(i)(B)

A list of job classifications in which some employees have occupational exposure, and

1910.1030(c)(2)(i)(C)

A list of all tasks and procedures or groups of closely related task and procedures in which occupational exposure occurs and that are performed by employees in job classifications listed in accordance with the provisions of paragraph (c)(2)(i)(B) of this standard.

1910.1030(c)(2)(ii)

This exposure determination shall be made without regard to the use of personal protective equipment.

1910.1030(d)

Methods of Compliance --

1910.1030(d)(1)

General. Universal precautions shall be observed to prevent contact with blood or other potentially infectious materials. Under circumstances in which differentiation between body fluid types is difficult or impossible, all body fluids shall be considered potentially infectious materials.

1910.1030(d)(2)

Engineering and Work Practice Controls.

1910.1030(d)(2)(i)

Engineering and work practice controls shall be used to eliminate or minimize employee exposure. Where occupational exposure remains after institution of these controls, personal protective equipment shall also be used.

..1910.1030(d)(2)(ii)

1910.1030(d)(2)(ii)

Engineering controls shall be examined and maintained or replaced on a regular schedule to ensure their effectiveness.

1910.1030(d)(2)(iii)

Employers shall provide handwashing facilities which are readily accessible to employees.

1910.1030(d)(2)(iv)

When provision of handwashing facilities is not feasible, the employer shall provide either an appropriate antiseptic hand cleanser in conjunction with clean cloth/paper towels or antiseptic towelettes. When antiseptic hand cleansers or towelettes are used, hands shall be

washed with soap and running water as soon as feasible.

1910.1030(d)(2)(v)

Employers shall ensure that employees wash their hands immediately or as soon as feasible after removal of gloves or other personal protective equipment.

1910.1030(d)(2)(vi)

Employers shall ensure that employees wash hands and any other skin with soap and water, or flush mucous membranes with water immediately or as soon as feasible following contact of such body areas with blood or other potentially infectious materials.

1910.1030(d)(2)(vii)

Contaminated needles and other contaminated sharps shall not be bent, recapped, or removed except as noted in paragraphs (d)(2)(vii)(A) and (d)(2)(vii)(B) below. Shearing or breaking of contaminated needles is prohibited.

..1910.1030(d)(2)(vii)(A)

1910.1030(d)(2)(vii)(A)

Contaminated needles and other contaminated sharps shall not be bent, recapped or removed unless the employer can demonstrate that no alternative is feasible or that such action is required by a specific medical or dental procedure.

1910.1030(d)(2)(vii)(B)

Such bending, recapping or needle removal must be accomplished through the use of a mechanical device or a one-handed technique.

1910.1030(d)(2)(viii)

Immediately or as soon as possible after use, contaminated reusable sharps shall be placed in appropriate containers until properly reprocessed. These containers shall be:

1910.1030(d)(2)(viii)(A)

Puncture resistant;

1910.1030(d)(2)(viii)(B)

Labeled or color-coded in accordance with this standard;

1910.1030(d)(2)(viii)(C)

Leakproof on the sides and bottom; and

1910.1030(d)(2)(viii)(D)

In accordance with the requirements set forth in paragraph (d)(4)(ii)(E) for reusable sharps.

1910.1030(d)(2)(ix)

Eating, drinking, smoking, applying cosmetics or lip balm, and handling contact lenses are prohibited in work areas where there is a reasonable likelihood of occupational exposure.

1910.1030(d)(2)(x)

Food and drink shall not be kept in refrigerators, freezers, shelves, cabinets or on countertops or benchtops where blood or other potentially infectious materials are present.

..1910.1030(d)(2)(xi)

1910.1030(d)(2)(xi)

All procedures involving blood or other potentially infectious materials shall be performed in such a manner as to minimize splashing, spraying, spattering, and generation of droplets of these substances.

1910.1030(d)(2)(xii)

Mouth pipetting/suctioning of blood or other potentially infectious materials is prohibited.

1910.1030(d)(2)(xiii)

Specimens of blood or other potentially infectious materials shall be placed in a container which prevents leakage during collection, handling, processing, storage, transport, or shipping.

1910.1030(d)(2)(xiii)(A)

The container for storage, transport, or shipping shall be labeled or color-coded according to paragraph (g)(1)(i) and closed prior to being stored, transported, or shipped. When a facility utilizes Universal Precautions in the handling of all specimens, the labeling/color-coding of specimens is not necessary provided containers are recognizable as containing specimens. This exemption only applies while such specimens/containers remain within the facility. Labeling or color-coding in accordance with paragraph (g)(1)(i) is required when such specimens/containers leave the facility.

1910.1030(d)(2)(xiii)(B)

If outside contamination of the primary container occurs, the primary container shall be placed within a second container which prevents leakage during handling, processing, storage, transport, or shipping and is labeled or color-coded according to the requirements of this standard.

..1910.1030(d)(2)(xiii)(C)

1910.1030(d)(2)(xiii)(C)

If the specimen could puncture the primary container, the primary container shall be placed

within a secondary container which is puncture-resistant in addition to the above characteristics.

1910.1030(d)(2)(xiv)

Equipment which may become contaminated with blood or other potentially infectious materials shall be examined prior to servicing or shipping and shall be decontaminated as necessary, unless the employer can demonstrate that decontamination of such equipment or portions of such equipment is not feasible.

1910.1030(d)(2)(xiv)(A)

A readily observable label in accordance with paragraph (g)(1)(i)(H) shall be attached to the equipment stating which portions remain contaminated.

1910.1030(d)(2)(xiv)(B)

The employer shall ensure that this information is conveyed to all affected employees, the servicing representative, and/or the manufacturer, as appropriate, prior to handling, servicing, or shipping so that appropriate precautions will be taken.

1910.1030(d)(3)

Personal Protective Equipment --

1910.1030(d)(3)(i)

Provision. When there is occupational exposure, the employer shall provide, at no cost to the employee, appropriate personal protective equipment such as, but not limited to, gloves, gowns, laboratory coats, face shields or masks and eye protection, and mouthpieces, resuscitation bags, pocket masks, or other ventilation devices. Personal protective equipment will be considered "appropriate" only if it does not permit blood or other potentially infectious materials to pass through to or reach the employee's work clothes, street clothes, undergarments, skin, eyes, mouth, or other mucous membranes under normal conditions of use and for the duration of time which the protective equipment will be used.

1910.1030(d)(3)(ii)

Use. The employer shall ensure that the employee uses appropriate personal protective equipment unless the employer shows that the employee temporarily and briefly declined to use personal protective equipment when, under rare and extraordinary circumstances, it was the employee's professional judgment that in the specific instance its use would have prevented the delivery of health care or public safety services or would have posed an increased hazard to the safety of the worker or co-worker. When the employee makes this judgement, the circumstances shall be investigated and documented in order to determine whether changes can be instituted to prevent such occurrences in the future.

1910.1030(d)(3)(iii)

Accessibility. The employer shall ensure that appropriate personal protective equipment in the appropriate sizes is readily accessible at the worksite or is issued to employees. Hypoallergenic gloves, glove liners, powderless gloves, or other similar alternatives shall be readily accessible to those employees who are allergic to the gloves normally provided.

1910.1030(d)(3)(iv)

Cleaning, Laundering, and Disposal. The employer shall clean, launder, and dispose of personal protective equipment required by paragraphs (d) and (e) of this standard, at no cost to the employee.

..1910.1030(d)(3)(v)

1910.1030(d)(3)(v)

Repair and Replacement. The employer shall repair or replace personal protective equipment as needed to maintain its effectiveness, at no cost to the employee.

1910.1030(d)(3)(vi)

If a garment(s) is penetrated by blood or other potentially infectious materials, the garment(s) shall be removed immediately or as soon as feasible.

1910.1030(d)(3)(vii)

All personal protective equipment shall be removed prior to leaving the work area.

1910.1030(d)(3)(viii)

When personal protective equipment is removed it shall be placed in an appropriately designated area or container for storage, washing, decontamination or disposal.

1910.1030(d)(3)(ix)

Gloves. Gloves shall be worn when it can be reasonably anticipated that the employee may have hand contact with blood, other potentially infectious materials, mucous membranes, and non-intact skin; when performing vascular access procedures except as specified in paragraph (d)(3)(ix)(D); and when handling or touching contaminated items or surfaces.

1910.1030(d)(3)(ix)(A)

Disposable (single use) gloves such as surgical or examination gloves, shall be replaced as soon as practical when contaminated or as soon as feasible if they are torn, punctured, or when their ability to function as a barrier is compromised.

..1910.1030(d)(3)(ix)(B)

1910.1030(d)(3)(ix)(B)

Disposable (single use) gloves shall not be washed or decontaminated for re-use.

1910.1030(d)(3)(ix)(C)

Utility gloves may be decontaminated for re-use if the integrity of the glove is not compromised. However, they must be discarded if they are cracked, peeling, torn, punctured, or exhibit other signs of deterioration or when their ability to function as a barrier is compromised.

1910.1030(d)(3)(ix)(D)

If an employer in a volunteer blood donation center judges that routine gloving for all phlebotomies is not necessary then the employer shall:

1910.1030(d)(3)(ix)(D)(1)

Periodically reevaluate this policy;

1910.1030(d)(3)(ix)(D)(2)

Make gloves available to all employees who wish to use them for phlebotomy;

1910.1030(d)(3)(ix)(D)(3)

Not discourage the use of gloves for phlebotomy; and

1910.1030(d)(3)(ix)(D)(4)

Require that gloves be used for phlebotomy in the following circumstances:

1910.1030(d)(3)(ix)(D)(4)(i)

When the employee has cuts, scratches, or other breaks in his or her skin;

1910.1030(d)(3)(ix)(D)(4)(ii)

When the employee judges that hand contamination with blood may occur, for example, when performing phlebotomy on an uncooperative source individual; and

1910.1030(d)(3)(ix)(D)(4)(iii)

When the employee is receiving training in phlebotomy.

..1910.1030(d)(3)(x)

1910.1030(d)(3)(x)

Masks, Eye Protection, and Face Shields. Masks in combination with eye protection devices, such as goggles or glasses with solid side shields, or chin-length face shields, shall be worn whenever splashes, spray, spatter, or droplets of blood or other potentially infectious materials may be generated and eye, nose, or mouth contamination can be reasonably anticipated.

1910.1030(d)(3)(xi)

Gowns, Aprons, and Other Protective Body Clothing. Appropriate protective clothing such as, but not limited to, gowns, aprons, lab coats, clinic jackets, or similar outer garments shall be worn in occupational exposure situations. The type and characteristics will depend upon the task and degree of exposure anticipated.

1910.1030(d)(3)(xii)

Surgical caps or hoods and/or shoe covers or boots shall be worn in instances when gross contamination can reasonably be anticipated (e.g., autopsies, orthopaedic surgery).

1910.1030(d)(4)

Housekeeping --

1910.1030(d)(4)(i)

General. Employers shall ensure that the worksite is maintained in a clean and sanitary condition. The employer shall determine and implement an appropriate written schedule for cleaning and method of decontamination based upon the location within the facility, type of surface to be cleaned, type of soil present, and tasks or procedures being performed in the area.

1910.1030(d)(4)(ii)

All equipment and environmental and working surfaces shall be cleaned and decontaminated after contact with blood or other potentially infectious materials.

..1910.1030(d)(4)(ii)(A)

1910.1030(d)(4)(ii)(A)

Contaminated work surfaces shall be decontaminated with an appropriate disinfectant after completion of procedures; immediately or as soon as feasible when surfaces are overtly contaminated or after any spill of blood or other potentially infectious materials; and at the end of the work shift if the surface may have become contaminated since the last cleaning.

1910.1030(d)(4)(ii)(B)

Protective coverings, such as plastic wrap, aluminum foil, or imperviously-backed absorbent paper used to cover equipment and environmental surfaces, shall be removed and replaced as soon as feasible when they become overtly contaminated or at the end of the workshift if they may have become contaminated during the shift.

1910.1030(d)(4)(ii)(C)

All bins, pails, cans, and similar receptacles intended for reuse which have a reasonable likelihood for becoming contaminated with blood or other potentially infectious materials shall be inspected and decontaminated on a regularly scheduled basis and cleaned and

decontaminated immediately or as soon as feasible upon visible contamination.

1910.1030(d)(4)(ii)(D)

Broken glassware which may be contaminated shall not be picked up directly with the hands. It shall be cleaned up using mechanical means, such as a brush and dust pan, tongs, or forceps.

1910.1030(d)(4)(ii)(E)

Reusable sharps that are contaminated with blood or other potentially infectious materials shall not be stored or processed in a manner that requires employees to reach by hand into the containers where these sharps have been placed.

1910.1030(d)(4)(iii)

Regulated Waste --

..1910.1030(d)(4)(iii)(A)

1910.1030(d)(4)(iii)(A)

Contaminated Sharps Discarding and Containment.

1910.1030(d)(4)(iii)(A)(1)

Contaminated sharps shall be discarded immediately or as soon as feasible in containers that are:

1910.1030(d)(4)(iii)(A)(1)(i)

Closable;

1910.1030(d)(4)(iii)(A)(1)(ii)

Puncture resistant;

1910.1030(d)(4)(iii)(A)(1)(iii)

Leakproof on sides and bottom; and

1910.1030(d)(4)(iii)(A)(1)(iv)

Labeled or color-coded in accordance with paragraph (g)(1)(i) of this standard.

1910.1030(d)(4)(iii)(A)(2)

During use, containers for contaminated sharps shall be:

1910.1030(d)(4)(iii)(A)(2)(i)

Easily accessible to personnel and located as close as is feasible to the immediate area where

sharps are used or can be reasonably anticipated to be found (e.g., laundries);

1910.1030(d)(4)(iii)(A)(2)(ii)

Maintained upright throughout use; and

1910.1030(d)(4)(iii)(A)(2)(iii)

Replaced routinely and not be allowed to overfill.

1910.1030(d)(4)(iii)(A)(3)

When moving containers of contaminated sharps from the area of use, the containers shall be:

1910.1030(d)(4)(iii)(A)(3)(i)

Closed immediately prior to removal or replacement to prevent spillage or protrusion of contents during handling, storage, transport, or shipping;

1910.1030(d)(4)(iii)(A)(3)(ii)

Placed in a secondary container if leakage is possible. The second container shall be:

1910.1030(d)(4)(iii)(A)(3)(ii)(A)

Closable;

1910.1030(d)(4)(iii)(A)(3)(ii)(B)

Constructed to contain all contents and prevent leakage during handling, storage, transport, or shipping; and

1910.1030(d)(4)(iii)(A)(3)(ii)(C)

Labeled or color-coded according to paragraph (g)(1)(i) of this standard.

1910.1030(d)(4)(iii)(A)(4)

Reusable containers shall not be opened, emptied, or cleaned manually or in any other manner which would expose employees to the risk of percutaneous injury.

1910.1030(d)(4)(iii)(B)

Other Regulated Waste Containment --

1910.1030(d)(4)(iii)(B)(1)

Regulated waste shall be placed in containers which are:

1910.1030(d)(4)(iii)(B)(1)(i)

Closable;

1910.1030(d)(4)(iii)(B)(1)(ii)

Constructed to contain all contents and prevent leakage of fluids during handling, storage, transport or shipping;

1910.1030(d)(4)(iii)(B)(1)(iii)

Labeled or color-coded in accordance with paragraph (g)(1)(i) this standard; and

1910.1030(d)(4)(iii)(B)(1)(iv)

Closed prior to removal to prevent spillage or protrusion of contents during handling, storage, transport, or shipping.

1910.1030(d)(4)(iii)(B)(2)

If outside contamination of the regulated waste container occurs, it shall be placed in a second container. The second container shall be:

1910.1030(d)(4)(iii)(B)(2)(i)

Closable;

1910.1030(d)(4)(iii)(B)(2)(ii)

Constructed to contain all contents and prevent leakage of fluids during handling, storage, transport or shipping;

1910.1030(d)(4)(iii)(B)(2)(iii)

Labeled or color-coded in accordance with paragraph (g)(1)(i) of this standard; and

1910.1030(d)(4)(iii)(B)(2)(iv)

Closed prior to removal to prevent spillage or protrusion of contents during handling, storage, transport, or shipping.

1910.1030(d)(4)(iii)(C)

Disposal of all regulated waste shall be in accordance with applicable regulations of the United States, States and Territories, and political subdivisions of States and Territories.

..1910.1030(d)(4)(iv)

1910.1030(d)(4)(iv)

Laundry.

1910.1030(d)(4)(iv)(A)

Contaminated laundry shall be handled as little as possible with a minimum of agitation.

1910.1030(d)(4)(iv)(A)(1)

Contaminated laundry shall be bagged or containerized at the location where it was used and shall not be sorted or rinsed in the location of use.

1910.1030(d)(4)(iv)(A)(2)

Contaminated laundry shall be placed and transported in bags or containers labeled or color-coded in accordance with paragraph (g)(1)(i) of this standard. When a facility utilizes Universal Precautions in the handling of all soiled laundry, alternative labeling or color-coding is sufficient if it permits all employees to recognize the containers as requiring compliance with Universal Precautions.

1910.1030(d)(4)(iv)(A)(3)

Whenever contaminated laundry is wet and presents a reasonable likelihood of soak-through of or leakage from the bag or container, the laundry shall be placed and transported in bags or containers which prevent soak-through and/or leakage of fluids to the exterior.

1910.1030(d)(4)(iv)(B)

The employer shall ensure that employees who have contact with contaminated laundry wear protective gloves and other appropriate personal protective equipment.

..1910.1030(d)(4)(iv)(C)

1910.1030(d)(4)(iv)(C)

When a facility ships contaminated laundry off-site to a second facility which does not utilize Universal Precautions in the handling of all laundry, the facility generating the contaminated laundry must place such laundry in bags or containers which are labeled or color-coded in accordance with paragraph (g)(1)(i).

1910.1030(e)

HIV and HBV Research Laboratories and Production Facilities.

1910.1030(e)(1)

This paragraph applies to research laboratories and production facilities engaged in the culture, production, concentration, experimentation, and manipulation of HIV and HBV. It does not apply to clinical or diagnostic laboratories engaged solely in the analysis of blood, tissues, or organs. These requirements apply in addition to the other requirements of the standard.

1910.1030(e)(2)

Research laboratories and production facilities shall meet the following criteria:

1910.1030(e)(2)(i)

Standard Microbiological Practices. All regulated waste shall either be incinerated or decontaminated by a method such as autoclaving known to effectively destroy bloodborne pathogens.

1910.1030(e)(2)(ii)

Special Practices.

1910.1030(e)(2)(ii)(A)

Laboratory doors shall be kept closed when work involving HIV or HBV is in progress.

..1910.1030(e)(2)(ii)(B)

1910.1030(e)(2)(ii)(B)

Contaminated materials that are to be decontaminated at a site away from the work area shall be placed in a durable, leakproof, labeled or color-coded container that is closed before being removed from the work area.

1910.1030(e)(2)(ii)(C)

Access to the work area shall be limited to authorized persons. Written policies and procedures shall be established whereby only persons who have been advised of the potential biohazard, who meet any specific entry requirements, and who comply with all entry and exit procedures shall be allowed to enter the work areas and animal rooms.

1910.1030(e)(2)(ii)(D)

When other potentially infectious materials or infected animals are present in the work area or containment module, a hazard warning sign incorporating the universal biohazard symbol shall be posted on all access doors. The hazard warning sign shall comply with paragraph (g)(1)(ii) of this standard.

1910.1030(e)(2)(ii)(E)

All activities involving other potentially infectious materials shall be conducted in biological safety cabinets or other physical-containment devices within the containment module. No work with these other potentially infectious materials shall be conducted on the open bench.

1910.1030(e)(2)(ii)(F)

Laboratory coats, gowns, smocks, uniforms, or other appropriate protective clothing shall be used in the work area and animal rooms. Protective clothing shall not be worn outside of the work area and shall be decontaminated before being laundered.

..1910.1030(e)(2)(ii)(G)

1910.1030(e)(2)(ii)(G)

Special care shall be taken to avoid skin contact with other potentially infectious materials. Gloves shall be worn when handling infected animals and when making hand contact with other potentially infectious materials is unavoidable.

1910.1030(e)(2)(ii)(H)

Before disposal all waste from work areas and from animal rooms shall either be incinerated or decontaminated by a method such as autoclaving known to effectively destroy bloodborne pathogens.

1910.1030(e)(2)(ii)(I)

Vacuum lines shall be protected with liquid disinfectant traps and high-efficiency particulate air (HEPA) filters or filters of equivalent or superior efficiency and which are checked routinely and maintained or replaced as necessary.

1910.1030(e)(2)(ii)(J)

Hypodermic needles and syringes shall be used only for parenteral injection and aspiration of fluids from laboratory animals and diaphragm bottles. Only needle-locking syringes or disposable syringe-needle units (i.e., the needle is integral to the syringe) shall be used for the injection or aspiration of other potentially infectious materials. Extreme caution shall be used when handling needles and syringes. A needle shall not be bent, sheared, replaced in the sheath or guard, or removed from the syringe following use. The needle and syringe shall be promptly placed in a puncture-resistant container and autoclaved or decontaminated before reuse or disposal.

1910.1030(e)(2)(ii)(K)

All spills shall be immediately contained and cleaned up by appropriate professional staff or others properly trained and equipped to work with potentially concentrated infectious materials.

..1910.1030(e)(2)(ii)(L)

1910.1030(e)(2)(ii)(L)

A spill or accident that results in an exposure incident shall be immediately reported to the laboratory director or other responsible person.

1910.1030(e)(2)(ii)(M)

A biosafety manual shall be prepared or adopted and periodically reviewed and updated at least annually or more often if necessary. Personnel shall be advised of potential hazards, shall be required to read instructions on practices and procedures, and shall be required to follow them.

1910.1030(e)(2)(iii)

Containment Equipment.

1910.1030(e)(2)(iii)(A)

Certified biological safety cabinets (Class I, II, or III) or other appropriate combinations of personal protection or physical containment devices, such as special protective clothing, respirators, centrifuge safety cups, sealed centrifuge rotors, and containment caging for animals, shall be used for all activities with other potentially infectious materials that pose a threat of exposure to droplets, splashes, spills, or aerosols.

1910.1030(e)(2)(iii)(B)

Biological safety cabinets shall be certified when installed, whenever they are moved and at least annually.

1910.1030(e)(3)

HIV and HBV research laboratories shall meet the following criteria:

..1910.1030(e)(3)(i)

1910.1030(e)(3)(i)

Each laboratory shall contain a facility for hand washing and an eye wash facility which is readily available within the work area.

1910.1030(e)(3)(ii)

An autoclave for decontamination of regulated waste shall be available.

1910.1030(e)(4)

HIV and HBV production facilities shall meet the following criteria:

1910.1030(e)(4)(i)

The work areas shall be separated from areas that are open to unrestricted traffic flow within the building. Passage through two sets of doors shall be the basic requirement for entry into the work area from access corridors or other contiguous areas. Physical separation of the high-containment work area from access corridors or other areas or activities may also be provided by a double-doored clothes-change room (showers may be included), airlock, or other access facility that requires passing through two sets of doors before entering the work area.

1910.1030(e)(4)(ii)

The surfaces of doors, walls, floors and ceilings in the work area shall be water resistant so that they can be easily cleaned. Penetrations in these surfaces shall be sealed or capable of being sealed to facilitate decontamination.

..1910.1030(e)(4)(iii)

1910.1030(e)(4)(iii)

Each work area shall contain a sink for washing hands and a readily available eye wash facility. The sink shall be foot, elbow, or automatically operated and shall be located near the exit door of the work area.

1910.1030(e)(4)(iv)

Access doors to the work area or containment module shall be self-closing.

1910.1030(e)(4)(v)

An autoclave for decontamination of regulated waste shall be available within or as near as possible to the work area.

1910.1030(e)(4)(vi)

A ducted exhaust-air ventilation system shall be provided. This system shall create directional airflow that draws air into the work area through the entry area. The exhaust air shall not be recirculated to any other area of the building, shall be discharged to the outside, and shall be dispersed away from occupied areas and air intakes. The proper direction of the airflow shall be verified (i.e., into the work area).

1910.1030(e)(5)

Training Requirements. Additional training requirements for employees in HIV and HBV research laboratories and HIV and HBV production facilities are specified in paragraph (g)(2)(ix).

1910.1030(f)

Hepatitis B Vaccination and Post-exposure Evaluation and Follow-up --

..1910.1030(f)(1)

1910.1030(f)(1)

General.

1910.1030(f)(1)(i)

The employer shall make available the hepatitis B vaccine and vaccination series to all employees who have occupational exposure, and post-exposure evaluation and follow-up to all employees who have had an exposure incident.

1910.1030(f)(1)(ii)

The employer shall ensure that all medical evaluations and procedures including the hepatitis B vaccine and vaccination series and post-exposure evaluation and follow-up, including

prophylaxis, are:

1910.1030(f)(1)(ii)(A)

Made available at no cost to the employee;

1910.1030(f)(1)(ii)(B)

Made available to the employee at a reasonable time and place;

1910.1030(f)(1)(ii)(C)

Performed by or under the supervision of a licensed physician or by or under the supervision of another licensed healthcare professional; and

1910.1030(f)(1)(ii)(D)

Provided according to recommendations of the U.S. Public Health Service current at the time these evaluations and procedures take place, except as specified by this paragraph (f).

1910.1030(f)(1)(iii)

The employer shall ensure that all laboratory tests are conducted by an accredited laboratory at no cost to the employee.

..1910.1030(f)(2)

1910.1030(f)(2)

Hepatitis B Vaccination.

1910.1030(f)(2)(i)

Hepatitis B vaccination shall be made available after the employee has received the training required in paragraph (g)(2)(vii)(I) and within 10 working days of initial assignment to all employees who have occupational exposure unless the employee has previously received the complete hepatitis B vaccination series, antibody testing has revealed that the employee is immune, or the vaccine is contraindicated for medical reasons.

1910.1030(f)(2)(ii)

The employer shall not make participation in a prescreening program a prerequisite for receiving hepatitis B vaccination.

1910.1030(f)(2)(iii)

If the employee initially declines hepatitis B vaccination but at a later date while still covered under the standard decides to accept the vaccination, the employer shall make available hepatitis B vaccination at that time.

1910.1030(f)(2)(iv)

The employer shall assure that employees who decline to accept hepatitis B vaccination offered by the employer sign the statement in Appendix A.

1910.1030(f)(2)(v)

If a routine booster dose(s) of hepatitis B vaccine is recommended by the U.S. Public Health Service at a future date, such booster dose(s) shall be made available in accordance with section (f)(1)(ii).

1910.1030(f)(3)

Post-exposure Evaluation and Follow-up. Following a report of an exposure incident, the employer shall make immediately available to the exposed employee a confidential medical evaluation and follow-up, including at least the following elements:

1910.1030(f)(3)(i)

Documentation of the route(s) of exposure, and the circumstances under which the exposure incident occurred;

..1910.1030(f)(3)(ii)

1910.1030(f)(3)(ii)

Identification and documentation of the source individual, unless the employer can establish that identification is infeasible or prohibited by state or local law;

1910.1030(f)(3)(ii)(A)

The source individual's blood shall be tested as soon as feasible and after consent is obtained in order to determine HBV and HIV infectivity. If consent is not obtained, the employer shall establish that legally required consent cannot be obtained. When the source individual's consent is not required by law, the source individual's blood, if available, shall be tested and the results documented.

1910.1030(f)(3)(ii)(B)

When the source individual is already known to be infected with HBV or HIV, testing for the source individual's known HBV or HIV status need not be repeated.

1910.1030(f)(3)(ii)(C)

Results of the source individual's testing shall be made available to the exposed employee, and the employee shall be informed of applicable laws and regulations concerning disclosure of the identity and infectious status of the source individual.

1910.1030(f)(3)(iii)

Collection and testing of blood for HBV and HIV serological status;

1910.1030(f)(3)(iii)(A)

The exposed employee's blood shall be collected as soon as feasible and tested after consent is obtained.

..1910.1030(f)(3)(iii)(B)

1910.1030(f)(3)(iii)(B)

If the employee consents to baseline blood collection, but does not give consent at that time for HIV serologic testing, the sample shall be preserved for at least 90 days. If, within 90 days of the exposure incident, the employee elects to have the baseline sample tested, such testing shall be done as soon as feasible.

1910.1030(f)(3)(iv)

Post-exposure prophylaxis, when medically indicated, as recommended by the U.S. Public Health Service;

1910.1030(f)(3)(v)

Counseling; and

1910.1030(f)(3)(vi)

Evaluation of reported illnesses.

1910.1030(f)(4)

Information Provided to the Healthcare Professional.

1910.1030(f)(4)(i)

The employer shall ensure that the healthcare professional responsible for the employee's Hepatitis B vaccination is provided a copy of this regulation.

1910.1030(f)(4)(ii)

The employer shall ensure that the healthcare professional evaluating an employee after an exposure incident is provided the following information:

1910.1030(f)(4)(ii)(A)

A copy of this regulation;

1910.1030(f)(4)(ii)(B)

A description of the exposed employee's duties as they relate to the exposure incident;

1910.1030(f)(4)(ii)(C)

Documentation of the route(s) of exposure and circumstances under which exposure

occurred;

..1910.1030(f)(4)(ii)(D)

1910.1030(f)(4)(ii)(D)

Results of the source individual's blood testing, if available; and

1910.1030(f)(4)(ii)(E)

All medical records relevant to the appropriate treatment of the employee including vaccination status which are the employer's responsibility to maintain.

1910.1030(f)(5)

Healthcare Professional's Written Opinion. The employer shall obtain and provide the employee with a copy of the evaluating healthcare professional's written opinion within 15 days of the completion of the evaluation.

1910.1030(f)(5)(i)

The healthcare professional's written opinion for Hepatitis B vaccination shall be limited to whether Hepatitis B vaccination is indicated for an employee, and if the employee has received such vaccination.

1910.1030(f)(5)(ii)

The healthcare professional's written opinion for post-exposure evaluation and follow-up shall be limited to the following information:

1910.1030(f)(5)(ii)(A)

That the employee has been informed of the results of the evaluation; and

1910.1030(f)(5)(ii)(B)

That the employee has been told about any medical conditions resulting from exposure to blood or other potentially infectious materials which require further evaluation or treatment.

..1910.1030(f)(5)(iii)

1910.1030(f)(5)(iii)

All other findings or diagnoses shall remain confidential and shall not be included in the written report.

1910.1030(f)(6)

Medical Recordkeeping. Medical records required by this standard shall be maintained in accordance with paragraph (h)(1) of this section.

1910.1030(g)

Communication of Hazards to Employees --

1910.1030(g)(1)

Labels and Signs --

1910.1030(g)(1)(i)

Labels.

1910.1030(g)(1)(i)(A)

Warning labels shall be affixed to containers of regulated waste, refrigerators and freezers containing blood or other potentially infectious material; and other containers used to store, transport or ship blood or other potentially infectious materials, except as provided in paragraph (g)(1)(i)(E), (F) and (G).

1910.1030(g)(1)(i)(B)

Labels required by this section shall include the following legend:

1910.1030(g)(1)(i)(C)

These labels shall be fluorescent orange or orange-red or predominantly so, with lettering and symbols in a contrasting color.

1910.1030(g)(1)(i)(D)

Labels shall be affixed as close as feasible to the container by string, wire, adhesive, or other method that prevents their loss or unintentional removal.

..1910.1030(g)(1)(i)(E)

1910.1030(g)(1)(i)(E)

Red bags or red containers may be substituted for labels.

1910.1030(g)(1)(i)(F)

Containers of blood, blood components, or blood products that are labeled as to their contents and have been released for transfusion or other clinical use are exempted from the labeling requirements of paragraph (g).

1910.1030(g)(1)(i)(G)

Individual containers of blood or other potentially infectious materials that are placed in a labeled container during storage, transport, shipment or disposal are exempted from the labeling requirement.

1910.1030(g)(1)(i)(H)

Labels required for contaminated equipment shall be in accordance with this paragraph and shall also state which portions of the equipment remain contaminated.

1910.1030(g)(1)(i)(I)

Regulated waste that has been decontaminated need not be labeled or color-coded.

1910.1030(g)(1)(ii)

Signs.

1910.1030(g)(1)(ii)(A)

The employer shall post signs at the entrance to work areas specified in paragraph (e), HIV and HBV Research Laboratory and Production Facilities, which shall bear the following legend:

(Name of the Infectious Agent)
(Special requirements for entering the area)
(Name, telephone number of the laboratory director or other responsible person.)

..1910.1030(g)(1)(ii)(B)

1910.1030(g)(1)(ii)(B)

These signs shall be fluorescent orange-red or predominantly so, with lettering and symbols in a contrasting color.

1910.1030(g)(2)

Information and Training.

1910.1030(g)(2)(i)

Employers shall ensure that all employees with occupational exposure participate in a training program which must be provided at no cost to the employee and during working

hours.

1910.1030(g)(2)(ii)

Training shall be provided as follows:

1910.1030(g)(2)(ii)(A)

At the time of initial assignment to tasks where occupational exposure may take place;

1910.1030(g)(2)(ii)(B)

Within 90 days after the effective date of the standard; and

1910.1030(g)(2)(ii)(C)

At least annually thereafter.

1910.1030(g)(2)(iii)

For employees who have received training on bloodborne pathogens in the year preceding the effective date of the standard, only training with respect to the provisions of the standard which were not included need be provided.

1910.1030(g)(2)(iv)

Annual training for all employees shall be provided within one year of their previous training.

..1910.1030(g)(2)(v)

1910.1030(g)(2)(v)

Employers shall provide additional training when changes such as modification of tasks or procedures or institution of new tasks or procedures affect the employee's occupational exposure. The additional training may be limited to addressing the new exposures created.

1910.1030(g)(2)(vi)

Material appropriate in content and vocabulary to educational level, literacy, and language of employees shall be used.

1910.1030(g)(2)(vii)

The training program shall contain at a minimum the following elements:

1910.1030(g)(2)(vii)(A)

An accessible copy of the regulatory text of this standard and an explanation of its contents;

1910.1030(g)(2)(vii)(B)

A general explanation of the epidemiology and symptoms of bloodborne diseases;

1910.1030(g)(2)(vii)(C)

An explanation of the modes of transmission of bloodborne pathogens;

1910.1030(g)(2)(vii)(D)

An explanation of the employer's exposure control plan and the means by which the employee can obtain a copy of the written plan;

1910.1030(g)(2)(vii)(E)

An explanation of the appropriate methods for recognizing tasks and other activities that may involve exposure to blood and other potentially infectious materials;

..1910.1030(g)(2)(vii)(F)

1910.1030(g)(2)(vii)(F)

An explanation of the use and limitations of methods that will prevent or reduce exposure including appropriate engineering controls, work practices, and personal protective equipment;

1910.1030(g)(2)(vii)(G)

Information on the types, proper use, location, removal, handling, decontamination and disposal of personal protective equipment;

1910.1030(g)(2)(vii)(H)

An explanation of the basis for selection of personal protective equipment;

1910.1030(g)(2)(vii)(I)

Information on the hepatitis B vaccine, including information on its efficacy, safety, method of administration, the benefits of being vaccinated, and that the vaccine and vaccination will be offered free of charge;

1910.1030(g)(2)(vii)(J)

Information on the appropriate actions to take and persons to contact in an emergency involving blood or other potentially infectious materials;

1910.1030(g)(2)(vii)(K)

An explanation of the procedure to follow if an exposure incident occurs, including the method of reporting the incident and the medical follow-up that will be made available;

1910.1030(g)(2)(vii)(L)

Information on the post-exposure evaluation and follow-up that the employer is required to

provide for the employee following an exposure incident;

..1910.1030(g)(2)(vii)(M)

1910.1030(g)(2)(vii)(M)

An explanation of the signs and labels and/or color coding required by paragraph (g)(1); and

1910.1030(g)(2)(vii)(N)

An opportunity for interactive questions and answers with the person conducting the training session.

1910.1030(g)(2)(viii)

The person conducting the training shall be knowledgeable in the subject matter covered by the elements contained in the training program as it relates to the workplace that the training will address.

1910.1030(g)(2)(ix)

Additional Initial Training for Employees in HIV and HBV Laboratories and Production Facilities. Employees in HIV or HBV research laboratories and HIV or HBV production facilities shall receive the following initial training in addition to the above training requirements.

1910.1030(g)(2)(ix)(A)

The employer shall assure that employees demonstrate proficiency in standard microbiological practices and techniques and in the practices and operations specific to the facility before being allowed to work with HIV or HBV.

1910.1030(g)(2)(ix)(B)

The employer shall assure that employees have prior experience in the handling of human pathogens or tissue cultures before working with HIV or HBV.

..1910.1030(g)(2)(ix)(C)

1910.1030(g)(2)(ix)(C)

The employer shall provide a training program to employees who have no prior experience in handling human pathogens. Initial work activities shall not include the handling of infectious agents. A progression of work activities shall be assigned as techniques are learned and proficiency is developed. The employer shall assure that employees participate in work activities involving infectious agents only after proficiency has been demonstrated.

1910.1030(h)

Recordkeeping --

1910.1030(h)(1)

Medical Records.

1910.1030(h)(1)(i)

The employer shall establish and maintain an accurate record for each employee with occupational exposure, in accordance with 29 CFR 1910.1020.

1910.1030(h)(1)(ii)

This record shall include:

1910.1030(h)(1)(ii)(A)

The name and social security number of the employee;

1910.1030(h)(1)(ii)(B)

A copy of the employee's hepatitis B vaccination status including the dates of all the hepatitis B vaccinations and any medical records relative to the employee's ability to receive vaccination as required by paragraph (f)(2);

1910.1030(h)(1)(ii)(C)

A copy of all results of examinations, medical testing, and follow-up procedures as required by paragraph (f)(3);

1910.1030(h)(1)(ii)(D)

The employer's copy of the healthcare professional's written opinion as required by paragraph (f)(5); and

..1910.1030(h)(1)(ii)(E)

1910.1030(h)(1)(ii)(E)

A copy of the information provided to the healthcare professional as required by paragraphs (f)(4)(ii)(B)(C) and (D).

1910.1030(h)(1)(iii)

Confidentiality. The employer shall ensure that employee medical records required by paragraph (h)(1) are:

1910.1030(h)(1)(iii)(A)

Kept confidential; and

1910.1030(h)(1)(iii)(B)

Not disclosed or reported without the employee's express written consent to any person

within or outside the workplace except as required by this section or as may be required by law.

1910.1030(h)(1)(iv)

The employer shall maintain the records required by paragraph (h) for at least the duration of employment plus 30 years in accordance with 29 CFR 1910.1020.

1910.1030(h)(2)

Training Records.

1910.1030(h)(2)(i)

Training records shall include the following information:

1910.1030(h)(2)(i)(A)

The dates of the training sessions;

1910.1030(h)(2)(i)(B)

The contents or a summary of the training sessions;

1910.1030(h)(2)(i)(C)

The names and qualifications of persons conducting the training; and

..1910.1030(h)(2)(i)(D)

1910.1030(h)(2)(i)(D)

The names and job titles of all persons attending the training sessions.

1910.1030(h)(2)(ii)

Training records shall be maintained for 3 years from the date on which the training occurred.

1910.1030(h)(3)

Availability.

1910.1030(h)(3)(i)

The employer shall ensure that all records required to be maintained by this section shall be made available upon request to the Assistant Secretary and the Director for examination and copying.

1910.1030(h)(3)(ii)

Employee training records required by this paragraph shall be provided upon request for examination and copying to employees, to employee representatives, to the Director, and to

the Assistant Secretary.

1910.1030(h)(3)(iii)

Employee medical records required by this paragraph shall be provided upon request for examination and copying to the subject employee, to anyone having written consent of the subject employee, to the Director, and to the Assistant Secretary in accordance with 29 CFR 1910.1020.

..1910.1030(h)(4)

1910.1030(h)(4)

Transfer of Records.

1910.1030(h)(4)(i)

The employer shall comply with the requirements involving transfer of records set forth in 29 CFR 1910.1020(h).

1910.1030(h)(4)(ii)

If the employer ceases to do business and there is no successor employer to receive and retain the records for the prescribed period, the employer shall notify the Director, at least three months prior to their disposal and transmit them to the Director, if required by the Director to do so, within that three month period.

1910.1030(h)(5)

Sharps injury log.

1910.1030(h)(5)(i)

The employer shall establish and maintain a sharps injury log for the recording of percutaneous injuries from contaminated sharps. The information in the sharps injury log shall be recorded and maintained in such manner as to protect the confidentiality of the injured employee. The sharps injury log shall contain, at a minimum:

1910.1030(h)(5)(i)(A)

The type and brand of device involved in the incident,

1910.1030(h)(5)(i)(B)

The department or work area where the exposure incident occurred, and

1910.1030(h)(5)(i)(C)

An explanation of how the incident occurred.

1910.1030(h)(5)(ii)

The requirement to establish and maintain a sharps injury log shall apply to any employer who is required to maintain a log of occupational injuries and illnesses under 29 CFR 1904.

1910.1030(h)(5)(iii)

The sharps injury log shall be maintained for the period required by 29 CFR 1904.6.

1910.1030(i)

Dates --

1910.1030(i)(1)

Effective Date. The standard shall become effective on March 6, 1992.

1910.1030(i)(2)

The Exposure Control Plan required by paragraph (c) of this section shall be completed on or before May 5, 1992.

1910.1030(i)(3)

Paragraph (g)(2) Information and Training and (h) Recordkeeping shall take effect on or before June 4, 1992.

1910.1030(i)(4)

Paragraphs (d)(2) Engineering and Work Practice Controls, (d)(3) Personal Protective Equipment, (d)(4) Housekeeping, (e) HIV and HBV Research Laboratories and Production Facilities, (f) Hepatitis B Vaccination and Post-Exposure Evaluation and Follow-up, and (g)(1) Labels and Signs, shall take effect July 6, 1992.

[56 FR 64004, Dec. 06, 1991, as amended at 57 FR 12717, April 13, 1992; 57 FR 29206, July 1, 1992; 61 FR 5507, Feb. 13, 1996; 66 FR 5325 Jan., 18, 2001]

Next Standard (1910.1030 App A)

Regulations (Standards - 29 CFR) - Table of Contents

Occupational Safety & Health Administration
200 Constitution Avenue, NW
Washington, DC 20210

Appendix 4. State Policies and Procedures Regarding Blood Borne Pathogens (BBP) & Post-Exposure Prophylaxis (PEP)

OSHA

- OSHA BBP PEP Regulations refer to Hepatitis B HIV and Hepatitis C. Following an exposure incident, costs associated with testing and treatment may not be charged to an employee's health insurance if the employee pays a portion of the premium. Rather, the employer must bear the costs and Workers Compensation procedures should be followed.

Workers Compensation (WC)

Every incident of work-related exposure must be documented on the Employer's First Report of Injury (VWC Form No. 3). The supervisor completes this form and submits it to the Department of General Services, Division of Risk Management, with a copy to the VDH Office of Quality Improvement and Human Resources.

- If the source patient is known to be positive, testing and medically necessary treatment for the employee are covered.
- If the source patient's status is unknown or known to be non-contaminated, neither testing nor treatment are covered.
- If the employee tests positive, testing and treatment are covered if exposure is proven to be a work-related incident.
- Neither testing nor treatment of the source patient are covered under the Workers Compensation program.

Employee Health Insurance

State employees may currently choose among a variety of health care plans. As in the case of any illness or injury, employees may seek coverage under the terms of their health care insurance.

Leave

For employees who are not participants in the Virginia Sickness and Disability Program (VSDP), leave which is compensable under Workers Compensation is charged as Workers Compensation leave. (The leave code is WT.) If it is not compensable, employees will use sick, annual or leave-without-pay.

VSDP participants use personal leave available to them for the seven day waiting period. After the waiting period, employees go on short-term disability according to the terms of VSDP.

Questions

Contact the VDH Office of Human Resources (840) 864-7100

Appendix 5. Uniform Blood and Body Fluid Exposure Report

(Pintable PDF  available at: http://vdhweb/epi/infapdx5.pdf)

EXPOSURE PREVENTION INFORMATION NETWORK

Uniform Blood and Body Fluid Exposure Report

6/96

Name: _____ Hospital ID: (for office use only) | | | | |

1. ID: (for office use only) B | | | | |

2. Date of exposure: month | | day | | year | |

3. Dept. where exposure occurred: _____ 4. Home Dept.: _____

5. Job Category: *(check one)*

- 1 M.D. *(attending/staff)* ; specify specialty _____
- 2 M.D. *(intern/resident/fellow)* ; specify specialty _____
- 3 medical student
- 4 nurse → specify:
  - 1 RN
  - 2 LPN
  - 3 NP
  - 4 CRNA
  - 5 midwife
- 5 nursing student
- 18 CNA
- 6 respiratory therapist
- 7 surgery attendant
- 8 other attendant
- 9 phlebotomist/venipuncture/I.V. team
- 10 clinical laboratory worker
- 11 technologist *(non-lab)*
- 12 dentist
- 13 dental hygienist
- 14 housekeeper
- 19 laundry worker
- 20 security
- 16 paramedic
- 17 other student
- 15 other, describe _____

6. Where did the exposure occur? *(check one)*

- 1 patient room
- 2 outside patient room *(hallway, nurses' station, etc.)*
- 3 emergency department
- 4 intensive/critical care unit; specify type _____
- 5 operating room
- 6 outpatient clinic/office
- 7 blood bank
- 8 venipuncture center
- 9 dialysis facility *(hemodialysis and peritoneal dialysis)*
- 10 procedure room *(x-ray, EMG, etc.)*
- 11 clinical laboratories
- 12 autopsy/pathology
- 13 service/utility area *(laundry, central supply, loading dock, etc.)*
- 16 labor and delivery room
- 17 home care
- 14 other, describe _____

7. Was the source patient identifiable? *(check one)*

- 1 yes
- 2 no
- 3 unknown
- 4 not applicable

8. Which body fluids were involved in the exposure? *(check all that apply)*

- ☐ blood or blood products
- ☐ vomit
- ☐ sputum
- ☐ saliva
- ☐ CSF
- ☐ peritoneal fluid
- ☐ pleural fluid
- ☐ amniotic fluid
- ☐ urine
- ☐ other, describe _____

If the body fluid other than blood was visibly contaminated with blood, check here: ☐

9. Was the exposed part: *(check all that apply)*

- ☐ intact skin
- ☐ non-intact skin
- ☐ eyes (conjunctiva)
- ☐ nose (mucosa)
- ☐ mouth (mucosa)
- ☐ other, describe _____

10. Did the blood or body fluid: *(check all that apply)*

- ☐ touch unprotected skin
- ☐ touch skin between gap in protective garments
- ☐ soak through protective garment or barrier
- ☐ soak through clothing

11. Which items were worn at the time of the exposure? *(check all that apply)*

- ☐ single pair latex/vinyl gloves
- ☐ double pair latex/vinyl gloves
- ☐ goggles
- ☐ eyeglasses
- ☐ eyeglasses with sideshields
- ☐ faceshield
- ☐ surgical mask
- ☐ surgical gown
- ☐ plastic apron
- ☐ lab coat, cloth
- ☐ lab coat, other _____
- ☐ other, describe _____

12. Was the exposure the result of: *(check one)*

- [1] direct patient contact
- [2] specimen container leaked/spilled
- [3] specimen container broke
- [4] I.V. tubing/bag/pump leaked/broke
- [10] feeding/ventilator/other tube separated/leaked/splashed; specify tubing: _____
- [5] other body fluid container spilled/leaked
- [6] touched contaminated equipment/surface
- [7] touched contaminated drapes/sheets/gowns, etc.
- [8] unknown
- [9] other, describe _____

If equipment failure, please specify: equipment type _____

manufacturer _____

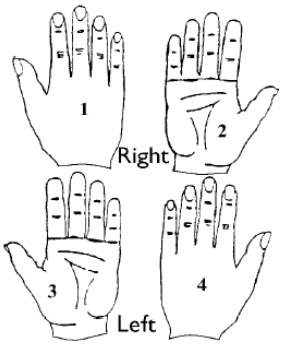
13. For how long was the blood or body fluid in contact with your skin or mucous membranes? *(check one)*

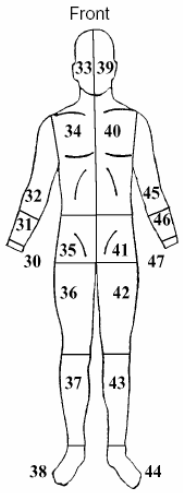
- [1] less than 5 minutes
- [2] 5-14 minutes
- [3] 15 minutes to 1 hour
- [4] more than 1 hour

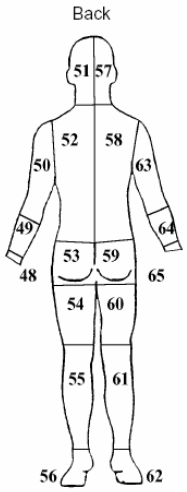
14. Estimate the quantity of blood/body fluid that came in contact with your skin or mucous membranes: *(check one)*

- [1] small amount *(up to 5 cc, or up to a teaspoon)*
- [2] moderate amount *(up to 50 cc, or up to a quarter cup)*
- [3] large amount *(more than 50 cc)*

15. Mark the size and location of the exposure:







16. Describe the circumstances leading to this exposure: (please note if equipment malfunction was involved)

_____

_____

_____

_____

_____

_____

Costs: for office use only
(round to nearest dollar)

				lab charges, employee & source *(Hb, HIV, other tests)*
				treatment, prophylaxis *(HBIG, Hb vaccine, tetanus, AZT, other)*
				service charges *(Emerg. Dept., Empl. Health, other)*
				other costs *(Workers' Comp., surgery, other)*
				total

Is this incident OSHA reportable?

** Medical treatment (HBIG, Hepatitis vaccine, gamma globulin, AZT, etc.; not first aid, not tetanus)*
** Restricted/lost work time; job transfer*
** Illness/death*

- [1] yes
- [2] no

If yes, enter:

			days away from work
			days restricted work activity

Does this incident meet the FDA medical device reporting criteria?

(yes if a device defect caused serious injury necessitating medical or surgical intervention, or death occurred within 10 work days of incident.)

- [1] yes
- [2] no

If yes, refer to EPINet manual for FDA reporting protocol.

Appendix 6. Uniform Needlestick and Sharp Object Injury Report

(Printable PDF  available at: http://vdhweb/epi/infapdx6.pdf)

EXPOSURE PREVENTION INFORMATION NETWORK

Uniform Needlestick and Sharp Object Injury Report

6/96

Name: _____ Hospital ID: (for office use only) ____

1. ID: (for office use only) S ____ 2. Date of injury: month ____ day ____ year ____

3. Dept. where injury occurred: _____ 4. Home Dept.: _____

5. Job Category: *(check one)*

1. M.D. *(attending/staff)* ; specify specialty _____
2. M.D. *(intern/resident/fellow)* ; specify specialty _____
3. medical student
4. nurse (specify → 1 RN; 2 LPN; 3 NP; 4 CRNA; 5 midwife)
5. nursing student
18. CNA
6. respiratory therapist/technician
7. surgery attendant
8. other attendant
9. phlebotomist/venipuncture/I.V. team
10. clinical laboratory worker
11. technologist *(non-lab)*
12. dentist
13. dental hygienist
14. housekeeper
19. laundry worker
20. security
16. paramedic
17. other student
15. other, describe _____

6. Where did the injury occur? *(check one)*

1. patient room
2. outside patient room *(hallway, nurses' station, etc.)*
3. emergency department
4. intensive/critical care unit; specify type _____
5. operating room
6. outpatient clinic/office
7. blood bank
8. venipuncture center
9. dialysis facility *(hemodialysis and peritoneal dialysis)*
10. procedure room *(x-ray, EMG, etc.)*
11. clinical laboratories
12. autopsy/pathology
13. service/utility area *(laundry, central supply, loading dock, etc.)*
16. labor and delivery room
17. home care
14. other, describe _____

7. Was the source patient identifiable? *(check one)*

1. yes
2. no
3. unknown
4. not applicable

8. Was the injured worker the original user of the sharp item? *(check one)*

1. yes
2. no
3. unknown
4. not applicable

9. The sharp item was: *(check one)*

1. contaminated *(known exposure to patient or contaminated equipment)*
2. uncontaminated *(no known exposure to patient or contaminated equipment)*
3. unknown

10. For what purpose was the sharp item originally used: *(check one)*

1. unknown/not applicable
2. injection, intramuscular/subcutaneous, or other injection through the skin *(syringe)*
3. heparin or saline flush *(syringe)*
4. other injection into (or aspiration from) I.V. injection site or I.V. port *(syringe)*
5. to connect I.V. line *(intermittent I.V./piggyback/I.V. infusion/other I.V. line connection)*
6. to start I.V. or set up heparin lock *(I.V. catheter or Butterfly™ -type needle)*
16. to place an arterial/central line
7. to draw a venous blood sample
8. to draw an arterial blood sample
   → if used to draw blood, was it a: 1 direct stick; 2 draw from a line
9. to obtain a body fluid or tissue sample *(urine/CSF/amniotic fluid/other fluid, biospy)*
10. fingerstick/heel stick
11. suturing
12. cutting
17. drilling
13. electrocautery
14. to contain a specimen or pharmaceutical *(glass items)*
15. other, describe _____

11. Did the injury occur: *(check one)*

- [1] before use of item *(item broke or slipped, assembling device, etc.)*
- [2] during use of item *(item slipped, patient jarred item, etc.)*
- [15] restraining patient
- [3] between steps of a multistep procedure *(between incremental injections, passing instruments, etc.)*
- [4] disassembling device or equipment
- [5] in preparation for reuse of reusable instrument *(sorting, disinfecting, sterilizing, etc.)*
- [6] while recapping a used needle
- [7] withdrawing a needle from rubber or other resistant material *(rubber stopper, I.V. port, etc.)*
- [16] device left on floor, table, bed, or other inappropriate place
- [8] other after use, before disposal *(in transit to trash, cleaning, sorting, etc.)*
- [9] from item left on or near disposal container
- [10] while putting the item into the disposal container
- [11] after disposal, stuck by item protruding from opening of disposal container
- [12] item pierced side of disposal container
- [13] after disposal, item protruded from **trash bag** or **inappropriate** waste container
- [14] other, describe _____

12. What device or item caused the injury?

(refer to list of items on attached page, enter item code here): [ ][ ] → **If device defect was involved, specify manufacturer:** _____

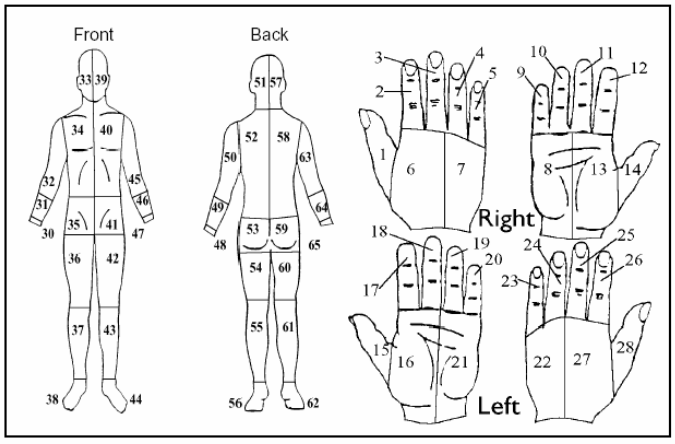
If item is coded as "other" (29, 59, 79), then please describe the item:

_____

13. If the item causing the injury was a needle, or sharp medical device, was it a "safety design" with a shielded, recessed, retractable, or blunted needle or blade?

- [1] yes
- [2] no/not applicable

14. Mark the location of the injury: →



15. Was the injury: *(check one)*

- [1] superficial *(little or no bleeding)*
- [2] moderate *(skin punctured, some bleeding)*
- [3] severe *(deep stick/cut, or profuse bleeding)*

16. If the injury was to the hands, did the sharp item penetrate: *(check one)*

- [1] single pair gloves
- [2] double pair gloves
- [3] no gloves

17. Was the injured worker: *(check one)*

- [1] right handed
- [2] left handed

18. Describe the circumstances leading to this injury: *(please note if a device malfunction was invovled)*

_____

_____

_____

_____

_____

_____

Costs: for office use only
(round to nearest dollar)

[ ][ ][ ][ ]	lab charges, employee & source *(Hb, HIV, other tests)*
[ ][ ][ ][ ]	treatment, prophylaxis *(HBIG, Hb vaccine, tetanus, AZT, other)*
[ ][ ][ ][ ]	service charges *(Emerg. Dept., Empl. Health, other)*
[ ][ ][ ][ ]	other costs *(Workers' Comp., surgery, other)*
[ ][ ][ ][ ]	total

Is this incident OSHA reportable?

* *Medical treatment (HBIG, Hepatitis vaccine, gamma globulin, AZT, etc.; not first aid, not tetanus)*
* *Restricted/lost work time; job transfer*
* *Illness/death*

- [1] yes
- [2] no

If yes, enter:

- [ ][ ][ ] days away from work
- [ ][ ][ ] days restricted work activity

Does this incident meet the FDA medical device reporting criteria?

(yes if a device defect caused serious injury necessitating medical or surgical intervention, or death occurred within 10 work days of incident.)

- [1] yes
- [2] no

If yes, refer to EPINet manual for FDA reporting protocol.

Appendix 7. Guideline for Isolation Precautions in Hospitals

Hospital Infection Control Practices Advisory Committee Membership List, November 1994

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The University of Texas Medical Center Branch at
Galveston
Galveston, Texas

Ronald L. Nichols, MD
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New Orleans, Louisiana

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Guideline for Isolation Precautions in Hospitals

Julia S. Garner, RN, MN, and the Hospital Infection Control Practices Advisory Committee

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- Table I. Synopsis of Types of Precautions and Patients Requiring the Precautions
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- Appendix A. Type and Duration of Precautions Needed for Selected Infections and Conditions
- References
- Reviewers

From the Public Health Service, US Department of Health and Human Services, Centers for Disease Control and Prevention, Atlanta, Georgia.
Garner JS, Hospital Infection Control Practices Advisory Commitee. Guideline for isolation precautions in hospitals. Infect Control Hosp Epidemiol 1996;17:53-80, and Am J Infect Control 1996;24:24-52.

Part I. Evolution of Isolation Practices

Hospital Infection Control Practices Advisory Committee

INTRODUCTION

To assist hospitals in maintaining up-to-date isolation practices, the Centers for Disease Control and Prevention (CDC) and the Hospital Infection Control Practices Advisory Committee (1) (HICPAC) have revised the "CDC Guideline for Isolation Precautions in Hospitals." HICPAC was established in 1991 to provide advice and guidance to the Secretary, Department of Health and Human Services (DHHS); the Assistant Secretary for Health, DHHS; the Director, CDC; and the Director, National Center for Infectious Diseases, regarding the practice of hospital infection control and strategies for surveillance, prevention, and control of nosocomial infections in US hospitals. HICPAC also advises the CDC on periodic updating of guidelines and other policy statements regarding prevention of nosocomial infections.

The revised guideline contains two parts. Part I, "Evolution of Isolation Practices," reviews the evolution of isolation practices in US hospitals, including their advantages, disadvantages, and controversial aspects, and provides the background for the HICPAC-consensus recommendations contained in Part II, "Recommendations for Isolation Precautions in Hospitals." The guideline supersedes previous CDC recommendations for isolation precautions in hospitals.(2-4)

The guideline recommendations are based on the latest epidemiologic information on transmission of infection in hospitals. The recommendations are intended primarily for use in the care of patients in acute-care hospitals, although some of the recommendations may be applicable for some patients receiving care in subacute-care or extended-care facilities. The recommendations are not intended for use in daycare, well care, or domiciliary care programs. Because there have been few studies to test the efficacy of isolation precautions and gaps still exist in the knowledge of the epidemiology and modes of transmission of some diseases, disagreement with some of the recommendations is expected. A working draft of the guideline was reviewed by experts in infection control and published in the *Federal Register* for public comment. However, all recommendations in the guideline may not reflect the opinions of all reviewers.

HICPAC recognizes that the goal of preventing transmission of infections in hospitals can be accomplished by multiple means and that hospitals will modify the recommendations according to their needs and circumstances and as directed by federal, state, or local regulations. Modification of the recommendations is encouraged if 1) the principles of epidemiology and disease transmission are maintained, and 2) precautions are included to interrupt spread of infection by all routes that are likely to be encountered in the hospital.

SUMMARY

The "Guideline for Isolation Precautions in Hospitals" was revised to meet the following objectives: 1) to be epidemiologically sound; 2) to recognize the importance of all body fluids, secretions, and excretions in the transmission of nosocomial pathogens; 3) to contain adequate precautions for infections transmitted by the airborne, droplet, and contact routes of transmission; 4) to be as simple and user friendly as possible; and 5) to use new terms to avoid confusion with existing infection control and isolation systems.

The revised guideline contains two tiers of precautions. In the first, and most important, tier are those precautions designed for the care of all patients in hospitals regardless of their diagnosis or presumed infection status. Implementation of these "Standard Precautions" is the primary strategy for successful nosocomial infection control. In the second tier are precautions designed only for the care of specified patients. These additional "Transmission-Based Precautions" are used for patients known or suspected to be infected or colonized with epidemiologically important pathogens that can be transmitted by airborne or droplet transmission or by contact with dry skin or contaminated surfaces.

Standard Precautions synthesize the major features of Universal (Blood and Body Fluid) Precautions (designed to reduce the risk of transmission of bloodborne pathogens) and Body Substance Isolation (designed to reduce the risk of transmission of pathogens from moist body substances). Standard Precautions apply to 1) blood; 2) all body fluids, secretions, and excretions, *except sweat*, regardless of whether or not they contain visible blood; 3) nonintact skin; and 4) mucous membranes. Standard ecautions are designed to reduce the risk of transmission of microorganisms from both recognized and unrecognized sources of infection in hospitals.

Transmission-Based Precautions are designed for patients documented or suspected to be infected or colonized with highly transmissible or epidemiologically important pathogens for which additional precautions beyond Standard Precautions are needed to interrupt transmission in hospitals. There are three types of Transmission-Based Precautions: Airborne Precautions, Droplet Precautions, and Contact Precautions. They may be combined for diseases that have multiple routes of transmission. When used either singularly or in combination, they are to be used in addition to Standard Precautions.

The revised guideline also lists specific clinical syndromes or conditions in both adult and pediatric patients that are highly suspicious for infection and identifies appropriate Transmission-Based Precautions to use on an empiric, temporary basis until a diagnosis can be made; these empiric, temporary precautions are also to be used in addition to Standard Precautions.

EARLY ISOLATION PRACTICES

The first published recommendations for isolation precautions in the United States appeared as early as 1877, when a hospital handbook recommended placing patients with infectious diseases in separate facilities,(5) which ultimately became known as infectious disease hospitals. Although this practice segregated infected patients from noninfected patients, nosocomial transmission continued to occur because infected patients were not separated from each other according to their disease, and few, if any, aseptic procedures were practiced. Personnel in infectious disease hospitals began to combat problems

of nosocomial transmission by setting aside a floor or ward for patients with similar diseases (6) and by practicing aseptic procedures recommended in nursing textbooks published from 1890 to 1900.(5)

In 1910, isolation practices in US hospitals were altered by the introduction of the cubicle system of isolation, which placed patients in multiple-bed wards.(6) With the cubicle system, hospital personnel used separate gowns, washed their hands with antiseptic solutions after patient contact, and disinfected objects contaminated by the patient. These nursing procedures, designed to prevent transmission of pathogenic organisms to other patients and personnel, became known as "barrier nursing." Use of the cubicle system of isolation and barrier nursing procedures provided general hospitals with an alternative to placing some patients in infectious disease hospitals.

During the 1950s, US infectious disease hospitals, except those designated exclusively for tuberculosis, began to close. In the mid-1960s, tuberculosis hospitals also began to close, partly because general hospital or outpatient treatment became preferred for patients with tuberculosis. Thus, by the late 1960s, patients with infectious diseases were housed in wards in general hospitals, either in specially designed, single-patient isolation rooms or in regular single or multiple-patient rooms.

CDC ISOLATION SYSTEMS

CDC Isolation Manual

In 1970, CDC published a detailed manual entitled *Isolation Techniques for Use in Hospitals* to assist general hospitals with isolation precautions.(2) A revised edition appeared in 1975.(3) The manual could be applied in small community hospitals with limited resources, as well as in large, metropolitan, university-associated medical centers.

The manual introduced the category system of isolation precautions. It recommended that hospitals use one of seven isolation categories (Strict Isolation, Respiratory Isolation, Protective Isolation, Enteric Precautions, Wound and Skin Precautions, Discharge Precautions, and Blood Precautions). The precautions recommended for each category were determined almost entirely by the epidemiologic features of the diseases grouped in the category, primarily their routes of transmission. Certain isolation techniques, believed to be the minimum necessary to prevent transmission of all diseases in the category, were indicated for each isolation category. Because all diseases in a category did not have the same epidemiology (ie, were not spread by exactly the same combination of modes of transmission), with some requiring fewer precautions than others, more precautions were suggested for some diseases than were necessary. This disadvantage of "over-isolation" for some diseases was offset by the convenience of having a small number of categories. More importantly, the simple system required personnel to learn only a few established routines for applying isolation precautions. To make the system even more user friendly, instructions for each category were printed on color-coded cards and placed on the doors, beds, or charts of patients on isolation precautions.

By the mid-1970s, 93% of US hospitals had adopted the isolation system recommended in the manual.(7) However, neither the efficacy of the category approach in preventing spread of infections nor the costs of using the system were evaluated by empirical studies.

By 1980, hospitals were experiencing new endemic and epidemic nosocomial infection problems, some caused by multidrug-resistant microorganisms and others caused by newly recognized pathogens, which required different isolation precautions from those specified by any existing isolation category. There was increasing need for isolation precautions to be directed more specifically at nosocomial transmission in special-care units, rather than at the intrahospital spread of infectious diseases acquired in the community.(8) Infection control professionals and nursing directors in hospitals with particularly sophisticated nursing staffs increasingly were calling for new isolation systems that would tailor precautions to the modes of transmission for each infection and avoid the over-isolation inherent in the category-specific approach. Further, new facts about the epidemiology and modes of transmission of some diseases made it necessary for CDC to revise the isolation manual. Toward that end, during 1981 to 1983, CDC Hospital Infections Program personnel consulted with infectious disease specialists in medicine, pediatrics, and surgery; hospital epidemiologists; and infection control practitioners about revising the manual.

CDC Isolation Guideline

In 1983, the *CDC Guideline for Isolation Precautions in Hospitals* (4) (hereafter referred to as the isolation guideline) was published to take the place of the 1975 isolation manual; it contained many important changes. One of the most important was the increased emphasis on decision making on the part of users. Unlike the 1975 manual, which encouraged few decisions on the part of users, the isolation guideline encouraged decision making at several levels.(9,10) First, hospital infection control committees were given a choice of selecting between category-specific or disease-specific isolation precautions or using the guideline to develop a unique isolation system appropriate to their hospitals' circumstances and environments. Second, personnel who placed a patient on isolation precautions were encouraged to make decisions about the individual precautions to be taken (e.g., whether the patient's age, mental status, or condition indicated that a private room was needed to prevent sharing of contaminated articles). Third, personnel taking care of patients on isolation precautions were encouraged to decide whether they needed to wear a mask, gown, or gloves based on the likelihood of exposure to infective material. Such decisions were deemed necessary to isolate the infection, but not the patient, and to reduce the costs associated with unnecessary isolation precautions.

In the category-specific section of the guideline, existing categories were modified, new categories were added, and many infections were reassigned to different categories. The old category of Blood Precautions, primarily directed toward patients with chronic carriage of hepatitis B virus (HBV), was renamed Blood and Body Fluid Precautions and was expanded to include patients with AIDS and body fluids other than blood. The old category of Protective Isolation was deleted because of studies demonstrating its lack of efficacy in general clinical practice in preventing the acquisition of infection by the immunocompromised patient for whom it had been described originally.(11,12) The 1983 guideline contained the following categories of isolation: Strict Isolation, Contact Isolation, Respiratory Isolation, Tuberculosis (acid-fast bacilli [AFB]) Isolation, Enteric Precautions, Drainage/Secretion Precautions, and Blood and Body Fluid Precautions. As with the category approach in the former CDC isolation manuals, these categories tended to over-isolate some patients.

In the disease-specific section of the guideline, the epidemiology of each infectious disease was considered individually by advocating only those precautions (e.g., private room, mask, gown, and

gloves) needed to interrupt transmission of the infection. In place of the categories and signs of the category-specific approach, a chart listed all diseases posing the threat of in-hospital transmission, with checks in columns indicating which precautions were required for each. Because precautions were individualized for each disease, hospitals using the system were encouraged to provide more initial training and inservice education and to encourage a much higher level of attention from patient-care personnel. Although disease-specific isolation precautions eliminated over-isolation, personnel might be prone to mistakes in applying the precautions, particularly if the disease was not seen regularly in the hospital,(9,10) if there was a delay in diagnosis, or if there was a misdiagnosis. Placing disease-specific isolation precautions in a hospital computerized information system resulted in more accurate use of the system.(13)

Because gaps existed in the knowledge of the epidemiology of some diseases, disagreement was expected, and occurred, regarding the placement of individual diseases within given categories, especially diseases with a respiratory component of transmission.(14) Placing measles in Respiratory Isolation (designed to prevent transmission of large-particle droplets) rather than in a category that had provisions for preventing transmission by airborne droplet nuclei and placing rubella and respiratory syncytial virus (RSV) infection in Contact Isolation were controversial.(15) There also was disagreement about the lack of a recommendation for adult patients with influenza, the need for private rooms for pediatric patients with RSV infections, and the length of time that precautions should be maintained.(15) The lack of empiric studies on the efficacy and costs of implementing the recommendations contributed to the disagreements.

As new epidemiologic data became available, several subsequent CDC reports (16-18) updated portions of the isolation guideline. Updated recommendations for management of patients with suspected hemorrhagic fever were published in 1988.(16) The recommendation for Respiratory Isolation for acute erythema infectiosum was superseded by a 1989 report that recommended Respiratory Isolation for human parvovirus B19 (the causative agent for erythema infectiosum) only when infected patients were in transient aplastic crisis or had immunodeficiency and chronic human parvovirus B19 infection.(17)

Recommendations for Tuberculosis (AFB) Isolation were updated in 1990 (18) because of heightened concern about nosocomial transmission of multidrug-resistant tuberculosis,(19,20) particularly in settings where persons with human immunodeficiency virus (HIV) infection were receiving care. The 1990 tuberculosis guidelines emphasized 1) placing a hospital patient with confirmed or suspected tuberculosis in a private room that has lower, or negative, air pressure compared with surrounding areas; 2) reducing mycobacterial contamination of air by dilution and removal of airborne contaminants; and 3) wearing particulate respirators, rather than standard surgical masks, when hospital personnel shared air space with an infectious tuberculosis patient. Subsequent recommendations reemphasized the importance of early diagnosis and treatment of tuberculosis.(21) In 1993, a second edition of the guidelines for preventing the transmission of tuberculosis in healthcare facilities was published in draft for public comment.(22) After review of written comments, the guidelines were modified and published.(23)

UNIVERSAL PRECAUTIONS

In 1985, largely because of the HIV epidemic, isolation practices in the United States were altered dramatically by the introduction of a new strategy for isolation precautions, which became known as

Universal Precautions (UP). Following the initial reports of hospital personnel becoming infected with HIV through needlesticks and skin contamination with patients' blood, a widespread outcry created the urgent need for new isolation strategies to protect hospital personnel from bloodborne infections. The subsequent modification of isolation precautions in some hospitals produced several major strategic changes and sacrificed some measures of protection against patient-to-patient transmission in the process of adding protection against patient-to-personnel transmission. In acknowledgment of the fact that many patients with bloodborne infections are not recognized, the new UP approach for the first time placed emphasis to applying Blood and Body Fluid Precautions universally to all persons regardless of their presumed infection status.(24) Until this time, most patients placed on isolation precautions were those for whom a diagnosis of an infectious disease had been made or was suspected. This provision led to the new name of Universal Precautions.

In addition to emphasizing prevention of needlestick injuries and the use of traditional barriers such as gloves and gowns, UP expanded Blood and Body Fluid Precautions to include use of masks and eye coverings to prevent mucous membrane exposures during certain procedures and the use of individual ventilation devices when the need for resuscitation was predictable. This approach, and particularly the techniques for preventing mucous membrane exposures, was reemphasized in subsequent CDC reports that contained recommendations for prevention of HIV transmission in healthcare settings.(25-28)

In 1987, one of these reports (27) stated that implementation of UP for all patients eliminated the need for the isolation category of Blood and Body Fluid Precautions for patients known or suspected to be infected with bloodborne pathogens; however, the report stated that other category- or disease-specific isolation precautions recommended in the CDC isolation guideline (4) should be used as necessary if infections other than bloodborne infections were diagnosed or suspected.

The 1987 report was updated by a 1988 report (28) that emphasized two important points: 1) blood was the single most important source of HIV, HBV, and other bloodborne pathogens in the occupational setting, and 2) infection control efforts for preventing transmission of bloodborne pathogens in healthcare settings must focus on preventing exposures to blood, as well as on delivery of HBV immunization. The report stated that UP applied to blood, to body fluids that had been implicated in the transmission of bloodborne infections (semen and vaginal secretions), to body fluids from which the risk of transmission was unknown (amniotic, cerebrospinal, pericardial, peritoneal, pleural, and synovial fluids), and to any other body fluid visibly contaminated with blood, but not to feces, nasal secretions, sputum, sweat, tears, urine, or vomitus unless they contained visible blood. Although HIV and HBV surface antigen (HBsAg) had been found in some of the fluids, secretions, or excretions to which UP did not apply, epidemiologic studies in the healthcare and community settings had not implicated these substances in the transmission of HIV and HBV infections. However, the report noted that some of the fluids, secretions, and excretions not covered under UP represented a potential source for nosocomial and community-acquired infections with other pathogens and referred readers to the CDC isolation guideline.

BODY SUBSTANCE ISOLATION

In 1987, a new system of isolation, called Body Substance Isolation (BSI), was proposed after 3 years of study by infection control personnel at the Harborview Medical Center in Seattle, Washington, and the University of California at San Diego, California, as an alternative to diagnosis-driven isolation

systems.(29) BSI focused on the isolation of all moist and potentially infectious body substances (blood, feces, urine, sputum, saliva, wound drainage, and other body fluids) from all patients, regardless of their presumed infection status, primarily through the use of gloves. Personnel were instructed to put on clean gloves just before contact with mucous membranes and nonintact skin, and to wear gloves for anticipated contact with moist body substances. In addition, a "Stop Sign Alert" was used to instruct persons wishing to enter the room of some patients with infections transmitted exclusively, or in part, by the airborne route to check with the floor nurse, who would determine whether a mask should be worn. Personnel were to be immune to or immunized against selected infectious diseases transmitted by airborne or droplet routes (measles, mumps, rubella, and varicella), or they were not to enter the rooms housing patients with these diseases. Other issues related to implementing BSI in a university teaching hospital were described.(30)

Among the advantages cited for BSI were that it was a simple, easy to learn and administer system, that it avoided the assumption that individuals without known or suspected diagnoses of transmissible infectious diseases were free of risk to patients and personnel, and that only certain body fluids were associated with transmission of infections. The disadvantages of BSI included the added cost of increased use of barrier equipment, particularly gloves (31); the difficulty in maintaining routine application of the protocol for all patients; the uncertainty about the precautions to be taken when entering a room with a "Stop Sign Alert"; and the potential for misapplication of the protocol to overprotect personnel at the expense of the patient.(32)

In a prospective study,(33) a combination use of gown and glove protocols similar to BSI led to lower infection rates in a pediatric intensive care unit (ICU), and, in other studies, similar combinations of barriers were associated with lower rates of nosocomial RSV infection in a pediatric ICU (34) and of resistant gram-negative organisms in an acute-care hospital.(35) However, in none of these studies, initiated before publication of BSI, were the authors attempting to evaluate BSI, nor were they able to separate the effect of gloves from that of gowns or from gloves and gowns used in combination.

Controversial aspects of BSI have been summarized.(15,36) BSI appeared to replace some, but not all, of the isolation precautions necessary to prevent transmission of infection. BSI did not contain adequate provisions to prevent 1) droplet transmission of serious infections in pediatric populations (e.g., invasive *Haemophilus influenza, Neisseria meningitides* meningitis and pneumonia, and pertussis); 2) direct or indirect contact transmission of epidemiologically important microorganisms from dry skin or environmental sources (e.g., *Clostridium difficile* and vancomycin-resistant enterococci); or, 3) true airborne transmission of infections transmitted over long distances by floating droplet nuclei. Although BSI emphasized that a private room was indicated for some patients with some diseases transmitted exclusively, or in part, by the true airborne route, it did not emphasize the need for special ventilation for patients known or suspected of having pulmonary tuberculosis or other diseases transmitted by airborne droplet nuclei. The lack of emphasis on special ventilation was of particular concern to CDC in the early 1990s because of multidrug-resistant tuberculosis.(18,19)

BSI and UP shared many similar features designed to prevent the transmission of bloodborne pathogens in hospitals. However, there was an important difference in the recommendation for glove use and handwashing. Under UP, gloves were recommended for anticipated contact with blood and specified body fluids, and hands were to be washed immediately after gloves were removed.(27,28) Under BSI, gloves were recommended for anticipated contact with any moist body substance, but handwashing after

glove removal was not required unless the hands visibly were soiled.(29) The lack of emphasis on handwashing after glove removal was cited as one of the theoretical disadvantages of BSI.(15,37,38) Using gloves as a protective substitute for handwashing may have provided a false sense of security, resulted in less handwashing, increased the risk of nosocomial transmission of pathogens, because hands can become contaminated even when gloves are used (39) and are contaminated easily in the process of removing gloves, and contributed to skin problems and allergies associated with the use of gloves.(40,41) On the other hand, proponents of BSI have noted that studies of handwashing have indicated that there is relatively low compliance by hospital personnel,(42,43) that glove use may have been easier to manage than handwashing, and that frequent handwashing may have led to eczema, skin cracking, or, in some persons, clinical damage to the skin of the hands.(44) Although use of gloves may have been better than no handwashing, the efficacy of using gloves as a substitute for handwashing has not been demonstrated.

OSHA BLOODBORNE PATHOGENS REGULATIONS

In 1989, the Occupational Safety and Health Administration (OSHA) published a proposed rule regarding occupational exposure to bloodborne pathogens in hospitals and other healthcare settings.(45) The proposed rule, based on the concept of UP, raised concerns in the infection control community. Among them were concerns about the use of "visibly bloody" as a marker for the infectious risk of certain body fluids and substances, the imbalance toward precautions to protect personnel and away from protection for patients, the lack of proven efficacy of UP, and the costs for implementing the proposed regulations.(46-50) After a series of OSHA public hearings and the review of written comments, the proposed rule was modified, and the final rule on occupational exposure to bloodborne pathogens was published in 1991.(51) Although the final rule was expected to improve occupational safety in the care of patients infected with bloodborne pathogens, its impact on the cost of patient care and on nosocomial infection control has remained undefined. Information on complying with the OSHA final rule has been made available by the American Hospital Association (52) and others.(53)

THE NEED FOR A NEW ISOLATION GUIDELINE

By the early 1990s, isolation had become an infection control conundrum.(54) Although many hospitals had incorporated all or portions of UP into their category- or disease-specific isolation system and others had adopted all or portions of BSI,(55,56) there was much local variation in the interpretation and use of UP and BSI, and a variety of combinations was common. Further, there was considerable confusion about which body fluids or substances required precautions under UP and BSI. Many hospitals espousing UP really were using BSI and vice versa. Moreover, there was continued lack of agreement about the importance of handwashing when gloves were used (14,15,27-29,37,38,57,58) and the need for additional precautions beyond BSI to prevent airborne, droplet, and contact transmission.(14,15,27-29,31,36,59,60) Some hospitals had not implemented appropriate guidelines for preventing transmission of tuberculosis, including multidrug-resistant tuberculosis.(61) As other multidrug-resistant microorganisms (62,63) were emerging, some hospitals failed to recognize them as new problems and to add appropriate precautions that would contain them.

In view of these problems and concerns, no simple adjustment to any of the existing approaches-UP, BSI, the CDC isolation guideline, or other isolation systems-appeared likely to solve the conundrum. Clearly what was needed was a new synthesis of the various systems that would provide a guideline with logistically feasible recommendations for preventing the many infections that occur in hospitals through diverse modes of transmission. To achieve this, the new guideline would 1) have to be epidemiologically sound; 2) have to recognize the importance of all body fluids, secretions, and excretions in the transmission of nosocomial pathogens; 3) have to contain adequate precautions for infections transmitted by the airborne, droplet, and contact routes of transmission; 4) have to be as simple and user friendly as possible; and 5) have to use new terms to avoid confusion with existing systems.

Based on these considerations, this guideline subsequently was developed. It contains three important changes from previous recommendations. First, it synthesizes the major features of UP (27,28) and BSI (29,30) into a single set of precautions to be used for the care of all patients in hospitals regardless of their presumed infection status. These precautions, called Standard Precautions, are designed to reduce the risk of transmission of bloodborne and other pathogens in hospitals. As a result of this synthesis, a large number of patients with diseases or conditions that previously required category- or disease-specific precautions in the 1983 CDC isolation guideline (4) now are covered under Standard Precautions and do not require additional precautions. Second, it collapses the old categories of isolation precautions (Strict Isolation, Contact Isolation, Respiratory Isolation, Tuberculosis Isolation, Enteric Precautions, and Drainage/Secretion Precautions) and the old disease-specific precautions into three sets of precautions based on routes of transmission for a smaller number of specified patients known or suspected to be infected or colonized with highly transmissible or epidemiologically important pathogens. These Transmission-Based Precautions, designed to reduce the risk of airborne, droplet, and contact transmission in hospitals, are to be used in addition to Standard Precautions. Third, it lists specific syndromes in both adult and pediatric patients that are highly suspicious for infection and identifies appropriate Transmission-Based Precautions to use on an empiric, temporary basis until a diagnosis can be made. These empiric, temporary precautions also are designed to be used in addition to Standard Precautions. The details of the guideline recommendations are presented in Part II, "Recommendations for Isolation Precautions in Hospitals."

In summary, this new guideline is another step in the evolution of isolation practices in US hospitals. It now is recommended for review and use by hospitals with the following provision. No guideline can address all of the needs of the more than 6,000 US hospitals, which range in size from five beds to more than 1,500 beds and serve very different patient populations. Hospitals are encouraged to review the recommendations and to modify them according to what is possible, practical, and prudent.

Part II. Recommendations for Isolation Precautions in Hospitals

Hospital Infection Control Practices Advisory Committee

RATIONALE FOR ISOLATION PRECAUTIONS IN HOSPITALS

Transmission of infection within a hospital requires three elements: a source of infecting microorganisms, a susceptible host, and a means of transmission for the microorganism.

Source

Human sources of the infecting microorganisms in hospitals may be patients, personnel, or, on occasion, visitors, and may include persons with acute disease, persons in the incubation period of a disease, persons who are colonized by an infectious agent but have no apparent disease, or persons who are chronic carriers of an infectious agent. Other sources of infecting microorganisms can be the patient's own endogenous flora, which may be difficult to control, and inanimate environmental objects that have become contaminated, including equipment and medications.

Host

Resistance among persons to pathogenic microorganisms varies greatly. Some persons may be immune to infection or may be able to resist colonization by an infectious agent; others exposed to the same agent may establish a commensal relationship with the infecting microorganism and become asymptomatic carriers; still others may develop clinical disease. Host factors such as age; underlying diseases; certain treatments with antimicrobials, corticosteroids, or other immunosuppressive agents; irradiation; and breaks in the first line of defense mechanisms caused by such factors as surgical operations, anesthesia, and indwelling catheters may render patients more susceptible to infection.

Transmission

Microorganisms are transmitted in hospitals by several routes, and the same microorganism may be transmitted by more than one route. There are five main routes of transmission: contact, droplet, airborne, common vehicle, and vectorborne. For the purpose of this guideline, common vehicle and vectorborne transmission will be discussed only briefly, because neither play a significant role in typical nosocomial infections.

(1) *Contact transmission*, the most important and frequent mode of transmission of nosocomial infections, is divided into two subgroups: direct-contact transmission and indirect-contact transmission.

(a) Direct-contact transmission involves a direct body surface-to-body surface contact and physical ransfer of microorganisms between a susceptible host and an infected or colonized person, such as occurs when a person turns a patient, gives a patient a bath, or performs other patient-care activities that require direct personal contact. Direct-contact transmission also can occur between two patients, with one serving as the source of the infectious microorganisms and the other as a susceptible host.

(b) Indirect-contact transmission involves contact of a susceptible host with a contaminated intermediate object, usually inanimate, such as contaminated instruments, needles, or dressings,

or contaminated hands that are not washed and gloves that are not changed between patients.

(2) *Droplet transmission*, theoretically, is a form of contact transmission. However, the mechanism of transfer of the pathogen to the host is quite distinct from either direct- or indirect-contact transmission. Therefore, droplet transmission will be considered a separate route of transmission in this guideline. Droplets are generated from the source person primarily during coughing, sneezing, and talking, and during the performance of certain procedures such as suctioning and bronchoscopy. Transmission occurs when droplets containing microorganisms generated from the infected person are propelled a short distance through the air and deposited on the host's conjunctivae, nasal mucosa, or mouth. Because droplets do not remain suspended in the air, special air handling and ventilation are not required to prevent droplet transmission; that is, droplet transmission *must not* be confused with airborne transmission.

(3) *Airborne transmission* occurs by dissemination of either airborne droplet nuclei (small-particle residue [5 μm or smaller in size] of evaporated droplets containing microorganisms that remain suspended in the air for long periods of time) or dust particles containing the infectious agent. Microorganisms carried in this manner can be dispersed widely by air currents and may become inhaled by a susceptible host within the same room or over a longer distance from the source patient, depending on environmental factors; therefore, special air handling and ventilation are required to prevent airborne transmission. Microorganisms transmitted by airborne transmission include Mycobacterium tuberculosis and the rubeola and varicella viruses.

(4) *Common vehicle transmission* applies to microorganisms transmitted by contaminated items such as food, water, medications, devices, and equipment.

(5) *Vectorborne transmission* occurs when vectors such as mosquitoes, flies, rats, and other vermin transmit microorganisms; this route of transmission is of less significance in hospitals in the United States than in other regions of the world.

Isolation precautions are designed to prevent transmission of microorganisms by these routes in hospitals. Because agent and host factors are more difficult to control, interruption of transfer of microorganisms is directed primarily at transmission. The recommendations presented in this guideline are based on this concept.

Placing a patient on isolation precautions, however, often presents certain disadvantages to the hospital, patients, personnel, and visitors. Isolation precautions may require specialized equipment and environmental modifications that add to the cost of hospitalization. Isolation precautions may make frequent visits by nurses, physicians, and other personnel inconvenient, and they may make it more difficult for personnel to give the prompt and frequent care that sometimes is required. The use of a multi-patient room for one patient uses valuable space that otherwise might accommodate several patients. Moreover, forced solitude deprives the patient of normal social relationships and may be psychologically harmful, especially to children. These disadvantages, however, must be weighed against the hospital's mission to prevent the spread of serious and epidemiologically important microorganisms in the hospital.

FUNDAMENTALS OF ISOLATION PRECAUTIONS

A variety of infection control measures are used for decreasing the risk of transmission of microorganisms in hospitals. These measures make up the fundamentals of isolation precautions.

Handwashing and Gloving

Handwashing frequently is called the single most important measure to reduce the risks of transmitting organisms from one person to another or from one site to another on the same patient. The scientific rationale, indications, methods, and products for handwashing have been delineated in other publications.(64-72)

Washing hands as promptly and thoroughly as possible between patient contacts and after contact with blood, body fluids, secretions, excretions, and equipment or articles contaminated by them is an important component of infection control and isolation precautions. In addition to handwashing, gloves play an important role in reducing the risks of transmission of microorganisms.

Gloves are worn for three important reasons in hospitals. First, gloves are worn to provide a protective barrier and to prevent gross contamination of the hands when touching blood, body fluids, secretions, excretions, mucous membranes, and nonintact skin (27-29); the wearing of gloves in specified circumstances to reduce the risk of exposures to bloodborne pathogens is mandated by the OSHA bloodborne pathogens final rule.(51) Second, gloves are worn to reduce the likelihood that microorganisms present on the hands of personnel will be transmitted to patients during invasive or other patient-care procedures that involve touching a patient's mucous membranes and nonintact skin. Third, gloves are worn to reduce the likelihood that hands of personnel contaminated with microorganisms from a patient or a fomite can transmit these microorganisms to another patient. In this situation, gloves must be changed between patient contacts and hands washed after gloves are removed.

Wearing gloves does not replace the need for handwashing, because gloves may have small, inapparent defects or may be torn during use, and hands can become contaminated during removal of gloves.(14,15,39,72-76) Failure to change gloves between patient contacts is an infection control hazard.(32)

Patient Placement

Appropriate patient placement is a significant component of isolation precautions. A private room is important to prevent direct- or indirect-contact transmission when the source patient has poor hygienic habits, contaminates the environment, or cannot be expected to assist in maintaining infection control precautions to limit transmission of microorganisms (i.e., infants, children, and patients with altered mental status). When possible, a patient with highly transmissible or epidemiologically important microorganisms is placed in a private room with handwashing and toilet facilities, to reduce opportunities for transmission of microorganisms.

When a private room is not available, an infected patient is placed with an appropriate roommate. Patients infected by the same microorganism usually can share a room, provided they are not infected with other potentially transmissible microorganisms and the likelihood of reinfection with the same

organism is minimal. Such sharing of rooms, also referred to as cohorting patients, is useful especially during outbreaks or when there is a shortage of private rooms. When a private room is not available and cohorting is not achievable or recommended,(23) it is very important to consider the epidemiology and mode of transmission of the infecting pathogen and the patient population being served in determining patient placement. Under these circumstances, consultation with infection control professionals is advised before patient placement. Moreover, when an infected patient shares a room with a noninfected patient, it also is important that patients, personnel, and visitors take precautions to prevent the spread of infection and that roommates are selected carefully.

Guidelines for construction, equipment, air handling, and ventilation for isolation rooms have been delineated in other publications.(77-79) A private room with appropriate air handling and ventilation is particularly important for reducing the risk of transmission of microorganisms from a source patient to susceptible patients and other persons in hospitals when the microorganism is spread by airborne transmission. Some hospitals use an isolation room with an anteroom as an extra measure of precaution to prevent airborne transmission. Adequate data regarding the need for an anteroom, however, is not available. Ventilation recommendations for isolation rooms housing patients with pulmonary tuberculosis have been delineated in other CDC guidelines.(23)

Transport of Infected Patients

Limiting the movement and transport of patients infected with virulent or epidemiologically important microorganisms and ensuring that such patients leave their rooms only for essential purposes reduces opportunities for transmission of microorganisms in hospitals. When patient transport is necessary, it is important that 1) appropriate barriers (e.g., masks, impervious dressings) are worn or used by the patient to reduce the opportunity for transmission of pertinent microorganisms to other patients, personnel, and visitors and to reduce contamination of the environment; 2) personnel in the area to which the patient is to be taken are notified of the impending arrival of the patient and of the precautions to be used to reduce the risk of transmission of infectious microorganisms; and 3) patients are informed of ways by which they can assist in preventing the transmission of their infectious microorganisms to others.

Masks, Respiratory Protection, Eye Protection, Face Shields

Various types of masks, goggles, and face shields are worn alone or in combination to provide barrier protection. A mask that covers both the nose and the mouth, and goggles or a face shield are worn by hospital personnel during procedures and patient-care activities that are likely to generate splashes or sprays of blood, body fluids, secretions, or excretions to provide protection of the mucous membranes of the eyes, nose, and mouth from contact transmission of pathogens. The wearing of masks, eye protection, and face shields in specified circumstances to reduce the risk of exposures to bloodborne pathogens is mandated by the OSHA bloodborne pathogens final rule.(51) A surgical mask generally is worn by hospital personnel to provide protection against spread of infectious large-particle droplets that are transmitted by close contact and generally travel only short distances (up to 3 ft) from infected patients who are coughing or sneezing.

An area of major concern and controversy over the last several years has been the role and selection of respiratory protection equipment and the implications of a respiratory protection program for prevention

of transmission of tuberculosis in hospitals. Traditionally, although the efficacy was not proven, a surgical mask was worn for isolation precautions in hospitals when patients were known or suspected to be infected with pathogens spread by the airborne route of transmission. In 1990, however, the CDC tuberculosis guidelines (18) stated that surgical masks may not be effective in preventing the inhalation of droplet nuclei and recommended the use of disposable particulate respirators, despite the fact that the efficacy of particulate respirators in protecting persons from the inhalation of *M tuberculosis* had not been demonstrated. By definition, particulate respirators included dust-mist (DM), dust-fume-mist (DFM), or high-efficiency particulate air (HEPA) filter respirators certified by the CDC National Institute for Occupational Safety and Health (NIOSH); because the generic term "particulate respirator" was used in the 1990 guidelines, the implication was that any of these respirators provided sufficient protection.(80)

In 1993, a draft revision of the CDC tuberculosis guidelines (22) outlined performance criteria for respirators and stated that some DM or DFM respirators might not meet these criteria. After review of public comments, the guidelines were finalized in October 1994,(23) with the draft respirator criteria unchanged. At that time, the only class of respirators that were known to consistently meet or exceed the performance criteria outlined in the 1994 tuberculosis guidelines and that were certified by NIOSH (as required by OSHA) were HEPA filter respirators. Subsequently, NIOSH revised the testing and certification requirements for all types of air-purifying respirators, including those used for tuberculosis control.(81) The new rule, effective in July 1995, provides a broader range of certified respirators that meet the performance criteria recommended by CDC in the 1994 tuberculosis guidelines. NIOSH has indicated that the N95 (N category at 95% efficiency) meets the CDC performance criteria for a tuberculosis respirator. The new respirators are likely to be available in late 1995. Additional information on the evolution of respirator recommendations, regulations to protect hospital personnel, and the role of various federal agencies in respiratory protection for hospital personnel has been published.(80)

Gowns and Protective Apparel

Various types of gowns and protective apparel are worn to provide barrier protection and to reduce opportunities for transmission of microorganisms in hospitals. Gowns are worn to prevent contamination of clothing and to protect the skin of personnel from blood and body fluid exposures. Gowns especially treated to make them impermeable to liquids, leg coverings, boots, or shoe covers provide greater protection to the skin when splashes or large quantities of infective material are present or anticipated. The wearing of gowns and protective apparel under specified circumstances to reduce the risk of exposures to bloodborne pathogens is mandated by the OSHA bloodborne pathogens final rule.(51)

Gowns are also worn by personnel during the care of patients infected with epidemiologically important microorganisms to reduce the opportunity for transmission of pathogens from patients or items in their environment to other patients or environments; when gowns are worn for this purpose, they are removed before leaving the patient's environment and hands are washed. Adequate data regarding the efficacy of gowns for this purpose, however, is not available.

Patient-Care Equipment and Articles

Many factors determine whether special handling and disposal of used patient-care equipment and articles are prudent or required, including the likelihood of contamination with infective material; the ability to cut, stick, or otherwise cause injury (needles, scalpels, and other sharp instruments [sharps]); the severity of the associated disease; and the environmental stability of the pathogens involved.(27,51,82-84) Some used articles are enclosed in containers or bags to prevent inadvertent exposures to patients, personnel, and visitors and to prevent contamination of the environment. Used sharps are placed in puncture-resistant containers; other articles are placed in a bag. One bag is adequate if the bag is sturdy and the article can be placed in the bag without contaminating the outside of the bag (85); otherwise, two bags are used.

The scientific rationale, indications, methods, products, and equipment for reprocessing patient-care equipment have been delineated in other publications.(68,84,86-91) Contaminated, reusable critical medical devices or patient-care equipment (i.e., equipment that enters normally sterile tissue or through which blood flows) or semicritical medical devices or patient-care equipment (i.e., equipment that touches mucous membranes) are sterilized or disinfected (reprocessed) after use to reduce the risk of transmission of microorganisms to other patients; the type of reprocessing is determined by the article and its intended use, the manufacturer's recommendations, hospital policy, and any applicable guidelines and regulations.

Noncritical equipment (i.e., equipment that touches intact skin) contaminated with blood, body fluids, secretions, or excretions is cleaned and disinfected after use, according to hospital policy. Contaminated disposable (single-use) patient-care equipment is handled and transported in a manner that reduces the risk of transmission of microorganisms and decreases environmental contamination in the hospital; the equipment is disposed of according to hospital policy and applicable regulations.

Linen and Laundry

Although soiled linen may be contaminated with pathogenic microorganisms, the risk of disease transmission is negligible if it is handled, transported, and laundered in a manner that avoids transfer of microorganisms to patients, personnel, and environments. Rather than rigid rules and regulations, hygienic and common sense storage and processing of clean and soiled linen are recommended.(27,83,92,93) The methods for handling, transporting, and laundering of soiled linen are determined by hospital policy and any applicable regulations.

Dishes, Glasses, Cups, and Eating Utensils

No special precautions are needed for dishes, glasses, cups, or eating utensils. Either disposable or reusable dishes and utensils can be used for patients on isolation precautions. The combination of hot water and detergents used in hospital dishwashers is sufficient to decontaminate dishes, glasses, cups, and eating utensils.

Routine and Terminal Cleaning

The room, or cubicle, and bedside equipment of patients on Transmission-Based Precautions are cleaned

using the same procedures used for patients on Standard Precautions, unless the infecting microorganism(s) and the amount of environmental contamination indicates special cleaning. In addition to thorough cleaning, adequate disinfection of bedside equipment and environmental surfaces (e.g., bedrails, bedside tables, carts, commodes, doorknobs, faucet handles) is indicated for certain pathogens, especially enterococci, which can survive in the inanimate environment for prolonged periods of time.(94) Patients admitted to hospital rooms that previously were occupied by patients infected or colonized with such pathogens are at increased risk of infection from contaminated environmental surfaces and bedside equipment if they have not been cleaned and disinfected adequately. The methods, thoroughness, and frequency of cleaning and the products used are determined by hospital policy.

HICPAC ISOLATION PRECAUTIONS

There are two tiers of HICPAC isolation precautions. In the first, and most important, tier are those precautions designed for the care of all patients in hospitals, regardless of their diagnosis or presumed infection status. Implementation of these "Standard Precautions" is the primary strategy for successful nosocomial infection control. In the second tier are precautions designed only for the care of specified patients. These additional "Transmission-Based Precautions" are for patients known or suspected to be infected by epidemiologically important pathogens spread by airborne or droplet transmission or by contact with dry skin or contaminated surfaces.

Standard Precautions

Standard Precautions synthesize the major features of UP (Blood and Body Fluid Precautions) (27,28) (designed to reduce the risk of transmission of bloodborne pathogens) and BSI (29,30) (designed to reduce the risk of transmission of pathogens from moist body substances) and applies them to all patients receiving care in hospitals, regardless of their diagnosis or presumed infection status. Standard Precautions apply to 1) blood; 2) all body fluids, secretions, and excretions *except sweat*, regardless of whether or not they contain visible blood; 3) nonintact skin; and 4) mucous membranes. Standard Precautions are designed to reduce the risk of transmission of microorganisms from both recognized and unrecognized sources of infection in hospitals.

Transmission-Based Precautions

Transmission-Based Precautions are designed for patients documented or suspected to be infected with highly transmissible or epidemiologically important pathogens for which additional precautions beyond Standard Precautions are needed to interrupt transmission in hospitals. There are three types of Transmission-Based Precautions: Airborne Precautions, Droplet Precautions, and Contact Precautions. They may be combined for diseases that have multiple routes of transmission. When used either singularly or in combination, they are to be used in addition to Standard Precautions.

Airborne Precautions are designed to reduce the risk of airborne transmission of infectious agents. Airborne transmission occurs by dissemination of either airborne droplet nuclei (small-particle residue [5 μm or smaller in size] of evaporated droplets that may remain suspended in the air for long periods of time) or dust particles containing the infectious agent. Microorganisms carried in this manner can be dispersed widely by air currents and may become inhaled by or deposited on a susceptible host within

the same room or over a longer distance from the source patient, depending on environmental factors; therefore, special air handling and ventilation are required to prevent airborne transmission. Airborne Precautions apply to patients known or suspected to be infected with epidemiologically important pathogens that can be transmitted by the airborne route.

Droplet Precautions are designed to reduce the risk of droplet transmission of infectious agents. Droplet transmission involves contact of the conjunctivae or the mucous membranes of the nose or mouth of a susceptible person with large-particle droplets (larger than 5 μm in size) containing microorganisms generated from a person who has a clinical disease or who is a carrier of the microorganism. Droplets are generated from the source person primarily during coughing, sneezing, or talking and during the performance of certain procedures such as suctioning and bronchoscopy. Transmission via large-particle droplets requires close contact between source and recipient persons, because droplets do not remain suspended in the air and generally travel only short distances, usually 3 ft or less, through the air. Because droplets do not remain suspended in the air, special air handling and ventilation are not required to prevent droplet transmission. Droplet Precautions apply to any patient known or suspected to be infected with epidemiologically important pathogens that can be transmitted by infectious droplets.

Contact Precautions are designed to reduce the risk of transmission of epidemiologically important microorganisms by direct or indirect contact. Direct-contact transmission involves skin-to-skin contact and physical transfer of microorganisms to a susceptible host from an infected or colonized person, such as occurs when personnel turn patients, bathe patients, or perform other patient-care activities that require physical contact. Direct-contact transmission also can occur between two patients (e.g., by hand contact), with one serving as the source of infectious microorganisms and the other as a susceptible host. Indirect-contact transmission involves contact of a susceptible host with a contaminated intermediate object, usually inanimate, in the patient's environment. Contact Precautions apply to specified patients known or suspected to be infected or colonized (presence of microorganism in or on patient but without clinical signs and symptoms of infection) with epidemiologically important microorganisms than can be transmitted by direct or indirect contact.

A synopsis of the types of precautions and the patients requiring the precautions is listed in Table 1.

EMPIRIC USE OF AIRBORNE, DROPLET, OR CONTACT PRECAUTIONS

In many instances, the risk of nosocomial transmission of infection may be highest before a definitive diagnosis can be made and before precautions based on that diagnosis can be implemented. The routine use of Standard Precautions for all patients should reduce greatly this risk for conditions other than those requiring Airborne, Droplet, or Contact Precautions. While it is not possible to prospectively identify all patients needing these enhanced precautions, certain clinical syndromes and conditions carry a sufficiently high risk to warrant the empiric addition of enhanced precautions while a more definitive diagnosis is pursued. A listing of such conditions and the recommended precautions beyond Standard Precautions is presented in Table 2.

The organisms listed under the column "Potential Pathogens" are not intended to represent the complete or even most likely diagnoses, but rather possible etiologic agents that require additional precautions beyond Standard Precautions until they can be ruled out. Infection control professionals are encouraged to modify or adapt this table according to local conditions. To ensure that appropriate empiric

precautions are implemented always, hospitals must have systems in place to evaluate patients routinely, according to these criteria as part of their preadmission and admission care.

IMMUNOCOMPROMISED PATIENTS

Immunocompromised patients vary in their susceptibility to nosocomial infections, depending on the severity and duration of immunosuppression. They generally are at increased risk for bacterial, fungal, parasitic, and viral infections from both endogenous and exogenous sources. The use of Standard Precautions for all patients and Transmission-Based Precautions for specified patients, as recommended in this guideline, should reduce the acquisition by these patients of institutionally acquired bacteria from other patients and environments.

It is beyond the scope of this guideline to address the various measures that may be used for immunocompromised patients to delay or prevent acquisition of potential pathogens during temporary periods of neutropenia. Rather, the primary objective of this guideline is to prevent transmission of pathogens from infected or colonized patients in hospitals. Users of this guideline, however, are referred to the "Guideline for Prevention of Nosocomial Pneumonia" (95,96) for the HICPAC recommendations for prevention of nosocomial aspergillosis and Legionnaires' disease in immunocompromised patients.

Recommendations

The recommendations presented below are categorized as follows:

Category IA. Strongly recommended for all hospitals and strongly supported by well-designed experimental or epidemiologic studies.

Category IB. Strongly recommended for all hospitals and reviewed as effective by experts in the field and a consensus of HICPAC based on strong rationale and suggestive evidence, even though definitive scientific studies have not been done.

Category II. Suggested for implementation in many hospitals. Recommendations may be supported by suggestive clinical or epidemiologic studies, a strong theoretical rationale, or definitive studies applicable to some, but not all, hospitals.

No recommendation; unresolved issue. Practices for which insufficient evidence or consensus regarding efficacy exists.

The recommendations are limited to the topic of isolation precautions. Therefore, they must be supplemented by hospital policies and procedures for other aspects of infection and environmental control, occupational health, administrative and legal issues, and other issues beyond the scope of this guideline.

I. Administrative Controls

A. Education

Develop a system to ensure that hospital patients, personnel, and visitors are educated about use of precautions and their responsibility for adherence to them. *Category IB*

B. Adherence to Precautions

Periodically evaluate adherence to precautions, and use findings to direct improvements. *Category IB*

II. Standard Precautions

Use Standard Precautions, or the equivalent, for the care of all patients. *Category IB*

A. Handwashing

(1) Wash hands after touching blood, body fluids, secretions, excretions, and contaminated items, whether or not gloves are worn. Wash hands immediately after gloves are removed, between patient contacts, and when otherwise indicated to avoid transfer of microorganisms to other patients or environments. It may be necessary to wash hands between tasks and procedures on the same patient to prevent cross-contamination of different body sites. *Category IB*

(2) Use a plain (nonantimicrobial) soap for routine handwashing. *Category IB*

(3) Use an antimicrobial agent or a waterless antiseptic agent for specific circumstances (e.g., control of outbreaks or hyperendemic infections), as defined by the infection control program. *Category IB* (See Contact Precautions for additional recommendations on using antimicrobial and antiseptic agents.)

B. Gloves

Wear gloves (clean, nonsterile gloves are adequate) when touching blood, body fluids, secretions, excretions, and contaminated items. Put on clean gloves just before touching mucous membranes and nonintact skin. Change gloves between tasks and procedures on the same patient after contact with material that may contain a high concentration of microorganisms. Remove gloves promptly after use, before touching noncontaminated items and environmental surfaces, and before going to another patient, and wash hands immediately to avoid transfer of microorganisms to other patients or environments. *Category IB*

C. Mask, Eye Protection, Face Shield

Wear a mask and eye protection or a face shield to protect mucous membranes of the eyes, nose, and mouth during procedures and patient-care activities that are likely to generate splashes or sprays of blood, body fluids, secretions, and excretions. *Category IB*

D. Gown

Wear a gown (a clean, nonsterile gown is adequate) to protect skin and to prevent soiling of clothing

during procedures and patient-care activities that are likely to generate splashes or sprays of blood, body fluids, secretions, or excretions. Select a gown that is appropriate for the activity and amount of fluid likely to be encountered. Remove a soiled gown as promptly as possible, and wash hands to avoid transfer of microorganisms to other patients or environments. *Category IB*

E. Patient-Care Equipment

Handle used patient-care equipment soiled with blood, body fluids, secretions, and excretions in a manner that prevents skin and mucous membrane exposures, contamination of clothing, and transfer of microorganisms to other patients and environments. Ensure that reusable equipment is not used for the care of another patient until it has been cleaned and reprocessed appropriately. Ensure that single-use items are discarded properly. *Category IB*

F. Environmental Control

Ensure that the hospital has adequate procedures for the routine care, cleaning, and disinfection of environmental surfaces, beds, bedrails, bedside equipment, and other frequently touched surfaces, and ensure that these procedures are being followed. *Category IB*

G. Linen

Handle, transport, and process used linen soiled with blood, body fluids, secretions, and excretions in a manner that prevents skin and mucous membrane exposures and contamination of clothing, and that avoids transfer of microorganisms to other patients and environments. *Category IB*

H. Occupational Health and Bloodborne Pathogens

(1) Take care to prevent injuries when using needles, scalpels, and other sharp instruments or devices; when handling sharp instruments after procedures; when cleaning used instruments; and when disposing of used needles. Never recap used needles, or otherwise manipulate them using both hands, or use any other technique that involves directing the point of a needle toward any part of the body; rather, use either a one-handed "scoop" technique or a mechanical device designed for holding the needle sheath. Do not remove used needles from disposable syringes by hand, and do not bend, break, or otherwise manipulate used needles by hand. Place used disposable syringes and needles, scalpel blades, and other sharp items in appropriate puncture-resistant containers, which are located as close as practical to the area in which the items were used, and place reusable syringes and needles in a puncture-resistant container for transport to the reprocessing area. *Category IB*

(2) Use mouthpieces, resuscitation bags, or other ventilation devices as an alternative to mouth-to-mouth resuscitation methods in areas where the need for resuscitation is predictable. *Category IB*

I. Patient Placement

Place a patient who contaminates the environment or who does not (or cannot be expected to) assist in maintaining appropriate hygiene or environmental control in a private room. If a private room is not

available, consult with infection control professionals regarding patient placement or other alternatives. *Category IB*

III. Airborne Precautions

In addition to Standard Precautions, use Airborne Precautions, or the equivalent, for patients known or suspected to be infected with microorganisms transmitted by airborne droplet nuclei (small-particle residue [5 μm or smaller in size] of evaporated droplets containing microorganisms that remain suspended in the air and that can be dispersed widely by air currents within a room or over a long distance). *Category IB*

A. Patient Placement

Place the patient in a private room that has 1) monitored negative air pressure in relation to the surrounding areas, 2) 6 to 12 air changes per hour, and 3) appropriate discharge of air outdoors or monitored high-efficiency filtration of room air before the air is circulated to other areas in the hospital.(23) Keep the room door closed and the patient in the room. When a private room is not available, place the patient in a room with a patient who has active infection with the same microorganism, unless otherwise recommended,(23) but with no other infection. When a private room is not available and cohorting is not desirable, consultation with infection control professionals is advised before patient placement. *Category IB*

B. Respiratory Protection

Wear respiratory protection (N95 respirator) when entering the room of a patient with known or suspected infectious pulmonary tuberculosis.(23,81) Susceptible persons should not enter the room of patients known or suspected to have measles (rubeola) or varicella (chickenpox) if other immune caregivers are available. If susceptible persons must enter the room of a patient known or suspected to have measles (rubeola) or varicella, they should wear respiratory protection (N95 respirator).(81) Persons immune to measles (rubeola) or varicella need not wear respiratory protection. *Category IB*

C. Patient Transport

Limit the movement and transport of the patient from the room to essential purposes only. If transport or movement is necessary, minimize patient dispersal of droplet nuclei by placing a surgical mask on the patient, if possible. *Category IB*

D. Additional Precautions for Preventing Transmission of Tuberculosis

Consult CDC "Guidelines for Preventing the Transmission of Tuberculosis in Health-Care Facilities"(23) for additional prevention strategies.

IV. Droplet Precautions

In addition to Standard Precautions, use Droplet Precautions, or the equivalent, for a patient known or

suspected to be infected with microorganisms transmitted by droplets (large-particle droplets [larger than 5 μm in size] that can be generated by the patient during coughing, sneezing, talking, or the performance of procedures). *Category IB*

A. Patient Placement

Place the patient in a private room. When a private room is not available, place the patient in a room with a patient(s) who has active infection with the same microorganism but with no other infection (cohorting). When a private room is not available and cohorting is not achievable, maintain spatial separation of at least 3 ft between the infected patient and other patients and visitors. Special air handling and ventilation are not necessary, and the door may remain open. *Category IB*

B. Mask

In addition to wearing a mask as outlined under Standard Precautions, wear a mask when working within 3 ft of the patient. (Logistically, some hospitals may want to implement the wearing of a mask to enter the room.) *Category IB*

C. Patient Transport

Limit the movement and transport of the patient from the room to essential purposes only. If transport or movement is necessary, minimize patient dispersal of droplets by masking the patient, if possible. *Category IB*

V. Contact Precautions

In addition to Standard Precautions, use Contact Precautions, or the equivalent, for specified patients known or suspected to be infected or colonized with epidemiologically important microorganisms that can be transmitted by direct contact with the patient (hand or skin-to-skin contact that occurs when performing patient-care activities that require touching the patient's dry skin) or indirect contact (touching) with environmental surfaces or patient-care items in the patient's environment. *Category IB*

A. Patient Placement

Place the patient in a private room. When a private room is not available, place the patient in a room with a patient(s) who has active infection with the same microorganism but with no other infection (cohorting). When a private room is not available and cohorting is not achievable, consider the epidemiology of the microorganism and the patient population when determining patient placement. Consultation with infection control professionals is advised before patient placement. *Category IB*

B. Gloves and Handwashing

In addition to wearing gloves as outlined under Standard Precautions, wear gloves (clean, nonsterile gloves are adequate) when entering the room. During the course of providing care for a patient, change gloves after having contact with infective material that may contain high concentrations of

microorganisms (fecal material and wound drainage). Remove gloves before leaving the patient's room and wash hands immediately with an antimicrobial agent or a waterless antiseptic agent.(72,94) After glove removal and handwashing, ensure that hands do not touch potentially contaminated environmental surfaces or items in the patient's room to avoid transfer of microorganisms to other patients or environments. *Category IB*

C. Gown

In addition to wearing a gown as outlined under Standard Precautions, wear a gown (a clean, nonsterile gown is adequate) when entering the room if you anticipate that your clothing will have substantial contact with the patient, environmental surfaces, or items in the patient's room, or if the patient is incontinent or has diarrhea, an ileostomy, a colostomy, or wound drainage not contained by a dressing. Remove the gown before leaving the patient's environment. After gown removal, ensure that clothing does not contact potentially contaminated environmental surfaces to avoid transfer of microorganisms to other patients or environments. *Category IB*

D. Patient Transport

Limit the movement and transport of the patient from the room to essential purposes only. If the patient is transported out of the room, ensure that precautions are maintained to minimize the risk of transmission of microorganisms to other patients and contamination of environmental surfaces or equipment. *Category IB*

E. Patient-Care Equipment

When possible, dedicate the use of noncritical patient-care equipment to a single patient (or cohort of patients infected or colonized with the pathogen requiring precautions) to avoid sharing between patients. If use of common equipment or items is unavoidable, then adequately clean and disinfect them before use for another patient. *Category IB*

F. Additional Precautions for Preventing the Spread of Vancomycin Resistance

Consult the HICPAC report on preventing the spread of vancomycin resistance for additional prevention strategies.(94)

Table 1
Synopsis of Types of Precautions and Patients Requiring the Precautions*

Standard Precautions

Use Standard Precautions for the care of all patients

Airborne Precautions

In addition to Standard Precautions, use Airborne Precautions for patients known or suspected to have serious illnesses transmitted by airborne droplet nuclei. Examples of such illnesses include:

Measles

Varicella (including disseminated zoster)†

Tuberculosis‡

Droplet Precautions

In addition to Standard Precautions, use Droplet Precautions for patients known or suspected to have serious illnesses transmitted by large particle droplets. Examples of such illnesses include:

Invasive *Haemophilus influenzae* type b disease, including meningitis, pneumonia, epiglottitis, and sepsis

Invasive *Neisseria meningitidis* disease, including meningitis, pneumonia, and sepsis

Other serious bacterial respiratory infections spread by droplet transmission, including:

Diphtheria (pharyngeal)

Mycoplasma pneumonia

Pertussis

Pneumonic plague

Streptococcal (group A) pharyngitis, pneumonia, or scarlet fever in infants and young children

Serious viral infections spread by droplet transmission, including:

Adenovirus†

Influenza

Mumps

Parvovirus B19

Rubella

Contact Precautions

In addition to Standard Precautions, use Contact Precautions for patients known or suspected to have serious illnesses easily transmitted by direct patient contact or by contact with items in the patient's environment. Examples of such illnesses include:

Gastrointestinal, respiratory, skin, or wound infections or colonization with multidrug-resistant bacteria judged by the infection control program, based on current state, regional, or national recommendations, to be of special clinical and epidemiologic significance

Enteric infections with a low infectious dose or prolonged environmental survival, including:

Clostridium difficile

For diapered or incontinent patients: enterohemorrhagic *Escherichia coli* O157:H7, *Shigella,* hepatitis A, or rotavirus

Respiratory syncytial virus, parainfluenza virus, or enteroviral infections in infants and young children

Skin infections that are highly contagious or that may occur on dry skin, including:

Diphtheria (cutaneous)

Herpes simplex virus (neonatal or mucocutaneous)

Impetigo

Major (noncontained) abscesses, cellulitis, or decubiti

Pediculosis

Scabies

Staphylococcal furunculosis in infants and young children

Zoster (disseminated or in the immunocompromised host)†

Viral/hemorrhagic conjunctivitis

Viral hemorrhagic infections (Ebola, Lassa, or Marburg)*	

* See Appendix A for a complete listing of infections requiring precautions, including appropriate footnotes.
† Certain infections require more than one type of precaution.
‡ See CDC "Guidelines for Preventing the Transmission of Tuberculosis in Health-Care Facilities."(23)

Table 2
Clinical Syndromes or Conditions Warranting Additional Empiric Precautions to Prevent Transmission of Epidemiologically Important Pathogens Pending Confirmation of Diagnosis*

Clinical Syndrome or Condition†	Potential Pathogens‡	Empiric Precautions
Diarrhea		
Acute diarrhea with a likely infectious cause in an incontinent or diapered patient	Enteric pathogens§	Contact
Diarrhea in an adult with a history of recent antibiotic use	*Clostridium difficile*	Contact
Meningitis	*Neisseria meningitidis*	Droplet
Rash or exanthems, generalized, etiology unknown		
Petechial/ecchymotic with fever	*Neisseria meningitidis*	Droplet

Vesicular	Varicella	Airborne and Contact
Maculopapular with coryza and fever	Rubeola (measles)	Airborne
Respiratory infections		
Cough/fever/upper lobe pulmonary infiltrate in an HIV-negative patient or a patient at low risk for HIV infection	*Mycobacterium tuberculosis*	Airborne
Cough/fever/pulmonary infiltrate in any lung location in a HIV-infected patient or a patient at high risk for HIV infection (23)	*Mycobacterium tuberculosis*	Airborne
Paroxysmal or severe persistent cough during periods of pertussis activity	*Bordetella pertussis*	Droplet
Respiratory infections, particularly bronchiolitis and croup, in infants and young children	Respiratory syncytial or parainfluenza virus	Contact
Risk of multidrug-resistant microorganisms		
History of infection or colonization with multidrug-resistant organisms‖	Resistant bacteria‖	Contact
Skin, wound, or urinary tract infection in a patient with a recent hospital or nursing home stay in a facility where multidrug-resistant organisms are prevalent	Resistant bacteria‖	Contact
Skin or Wound Infection		
Abscess or draining wound that cannot be covered	*Staphylococcus aureus,* group A streptococcus	Contact

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* Infection control professionals are encouraged to modify or adapt this table according to local conditions. To ensure that appropriate empiric precautions are implemented always, hospitals must have systems in place to evaluate patients routinely according to these criteria as part of their preadmission and admission care.

† Patients with the syndromes or conditions listed below may present with atypical signs or symptoms (eg, pertussis in neonates and adults may not have paroxysmal or severe cough). The clinician's index of suspicion should be guided by the prevalence of specific conditions in the community, as well as clinical

judgment.
‡ The organisms listed under the column "Potential Pathogens" are not intended to represent the complete, or even most likely, diagnoses, but rather possible etiologic agents that require additional precautions beyond Standard Precautions until they can be ruled out.
§ These pathogens include enterohemorrhagic *Escherichia coli* O157:H7, *Shigella,* hepatitis A, and rotavirus.
||Resistant bacteria judged by the infection control program, based on current state, regional, or national recommendations, to be of special clinical or epidemiological significance.

Appendix A

Type and Duration of Precautions Needed for Selected Infections and Conditions

Infection/Condition	Precautions	
	Type*	Duration†
Abscess		
Draining, major [a]	C	DI
Draining, minor or limited [b]	S	
Acquired immunodeficiency syndrome [c]	S	
Actinomycosis	S	
Adenovirus infection, in infants and young children	D,C	DI
Amebiasis	S	
Anthrax		
Cutaneous	S	
Pulmonary	S	
Antibiotic-associated colitis (see *Clostridium difficile*)		
Arthropodborne viral encephalitides (eastern, western, Venezuelan equine encephalomyelitis; St Louis, California encephalitis)	S [d]	
Arthropodborne viral fevers (dengue, yellow fever, Colorado tick fever)	S [d]	
Ascariasis	S	
Aspergillosis	S	
Babesiosis	S	

Blastomycosis, North American, cutaneous or pulmonary	S	
Botulism	S	
Bronchiolitis (see respiratory infections in infants and young children)		
Brucellosis (undulant, Malta, Mediterranean fever)	S	
Campylobacter gastroenteritis (see gastroenteritis)		
Candidiasis, all forms including mucocutaneous	S	
Cat-scratch fever (benign inoculation lymphoreticulosis)	S	
Cellulitis, uncontrolled drainage	C	DI
Chancroid (soft chancre)	S	
Chickenpox (varicella; see F [e] for varicella exposure)	A,C	F [e]
Chlamydia trachomatis		
Conjunctivitis	S	
Genital	S	
Respiratory	S	
Cholera (see gastroenteritis)		
Closed-cavity infection		
Draining, limited or minor	S	
Not draining	S	
Clostridium		
C botulinum	S	
C difficile	C	DI
C perfringens		
Food poisoning	S	

Gas gangrene	S	
Coccidioidomycosis (valley fever)		
Draining lesions	S	
Pneumonia	S	
Colorado tick fever	S	
Congenital rubella	C	F [f]
Conjunctivitis		
Acute bacterial	S	
Chlamydia	S	
Gonococcal	S	
Acute viral (acute hemorrhagic)	C	DI
Coxsackievirus disease (see enteroviral infection)		
Creutzfeldt-Jakob disease	S [g]	
Croup (see respiratory infections in infants and young children)		
Cryptococcosis	S	
Cryptosporidiosis (see gastroenteritis)		
Cysticercosis	S	
Cytomegalovirus infection, neonatal or immunosuppressed	S	
Decubitus ulcer, infected		
Major [a]	C	DI
Minor or limited [b]	S	
Dengue	S [d]	
Diarrhea, acute-infective etiology suspected (see gastroenteritis)		

Diphtheria		
Cutaneous	C	CN [h]
Pharyngeal	D	CN [h]
Ebola viral hemorrhagic fever	C [i]	DI
Echinococcosis (hydatidosis)	S	
Echovirus (see enteroviral infection)		
Encephalitis or encephalomyelitis (see specific etiologic agents)		
Endometritis	S	
Enterobiasis (pinworm disease, oxyuriasis)	S	
Enterococcus species (see multidrug-resistant organisms if epidemiologically significant or vancomycin resistant)		
Enterocolitis, *Clostridium difficile*	C	DI
Enteroviral infections		
Adults	S	
Infants and young children	C	DI
Epiglottitis, due to *Haemophilus influenzae*	D	U(24 hrs)
Epstein-Barr virus infection, including infectious mononucleosis	S	
Erythema infectiosum (also see Parvovirus B19)	S	
Escherichia coli gastroenteritis (see gastroenteritis)		
Food poisoning		
Botulism	S	
Clostridium perfringens or welchii	S	
Staphylococcal	S	

Furunculosis-staphylococcal		
Infants and young children	C	DI
Gangrene (gas gangrene)	S	
Gastroenteritis		
Campylobacter species	S[i]	
Cholera	S[i]	
Clostridium difficile	C	DI
Cryptosporidium species	S[i]	
Escherichia coli		
Enterohemorrhagic O157:H7	S[i]	
Diapered or incontinent	C	DI
Other species	S[i]	
Giardia lamblia	S[i]	
Rotavirus	S[i]	
Diapered or incontinent	C	DI
Salmonella species (including *S typhi*)	S[i]	
Shigella species	S[i]	
Diapered or incontinent	C	DI
Vibrio parahaemolyticus	S[i]	
Viral (if not covered elsewhere)	S[i]	
Yersinia enterocolitica	S[i]	
German measles (see rubella)		
Giardiasis (see gastroenteritis)		

Gonococcal ophthalmia neonatorum (gonorrheal ophthalmia, acute conjunctivitis of newborn)	S	
Gonorrhea	S	
Granuloma inguinale (donovanosis, granuloma venereum)	S	
Guillain-Barré, syndrome	S	
Hand, foot, and mouth disease (see enteroviral infection)		
Hantavirus pulmonary syndrome	S	
Helicobacter pylori	S	
Hemorrhagic fevers (for example, Lassa and Ebola)	C [i]	DI
Hepatitis, viral		
Type A	S	
Diapered or incontinent patients	C	F [k]
Type B-HBsAg positive	S	
Type C and other unspecified non-A, non-B	S	
Type E	S	
Herpangina (see enteroviral infection)		
Herpes simplex (*Herpesvirus hominis*)		
Encephalitis	S	
Neonatal [l] (see F [l] for neonatal exposure)	C	DI
Mucocutaneous, disseminated or primary, severe	C	DI
Mucocutaneous, recurrent (skin, oral, genital)	S	
Herpes zoster (varicella-zoster)		
Localized in immunocompromised patient, or disseminated	A,C	DI [m]

Localized in normal patient	S [m]	
Histoplasmosis	S	
HIV (see human immunodeficiency virus)	S	
Hookworm disease (ancylostomiasis, uncinariasis)	S	
Human immunodeficiency virus (HIV) infection [c]	S	
Impetigo	C	U(24 hrs)
Infectious mononucleosis	S	
Influenza	D [n]	DI
Kawasaki syndrome	S	
Lassa fever	C [i]	DI
Legionnaires' disease	S	
Leprosy	S	
Leptospirosis	S	
Lice (pediculosis)	C	U(24 hrs)
Listeriosis	S	
Lyme disease	S	
Lymphocytic choriomeningitis	S	
Lymphogranuloma venereum	S	
Malaria	S [d]	
Marburg virus disease	C [i]	DI
Measles (rubeola), all presentations	A	DI
Melioidosis, all forms	S	
Meningitis		

Aseptic (nonbacterial or viral meningitis; also see enteroviral infections)	S	
Bacterial, gram-negative enteric, in neonates	S	
Fungal	S	
Haemophilus influenzae, known or suspected	D	U(24 hrs)
Listeria monocytogenes	S	
Neisseria meningitidis (meningococcal) known or suspected	D	U(24 hrs)
Pneumococcal	S	
Tuberculosis [o]	S	
Other diagnosed bacterial	S	
Meningococcal pneumonia	D	U(24 hrs)
Meningococcemia (meningococcal sepsis)	D	U(24 hrs)
Molluscum contagiosum	S	
Mucormycosis	S	
Multidrug-resistant organisms, infection or colonization [p]		
Gastrointestinal	C	CN
Respiratory	C	CN
Pneumococcal	S	
Skin, wound, or burn	C	CN
Mumps (infectious parotitis)	D	F [q]
Mycobacteria, nontuberculosis (atypical)		
Pulmonary	S	
Wound	S	
Mycoplasma pneumonia	D	DI

Necrotizing enterocolitis	S	
Nocardiosis, draining lesions or other presentations	S	
Norwalk agent gastroenteritis (see viral gastroenteritis)		
Orf	S	
Parainfluenza virus infection, respiratory in infants and young children	C	DI
Parvovirus B19	D	F [r]
Pediculosis (lice)	C	U(24 hrs)
Pertussis (whooping cough)	D	F [s]
Pinworm infection	S	
Plague		
Bubonic	S	
Pneumonic	D	U(72 hrs)
Pleurodynia (see enteroviral infection)		
Pneumonia		
Adenovirus	D,C	DI
Bacterial not listed elsewhere (including gram-negative bacterial)	S	
Burkholderia cepacia in cystic fibrosis (CF) patients, including respiratory tract colonization	S [t]	
Chlamydia	S	
Fungal	S	
Haemophilus influenzae		
Adults	S	
Infants and children (any age)	D	U(24 hrs)

Legionella	S	
Meningococcal	D	U(24 hrs)
Multidrug-resistant bacterial (see multidrug-resistant organisms)		
Mycoplasma (primary atypical pneumonia)	D	DI
Pneumococcal	S	
Multidrug-resistant (see multidrug-resistant organisms)		
Pneumocystis carinii	S [u]	
Pseudomonas cepacia (see *Burkholderia cepacia*)	S [t]	
Staphylococcus aureus	S	
Streptococcus, group A		
Adults	S	
Infants and young children	D	U(24hrs)
Viral		
Adults	S	
Infants and young children (see respiratory infectious disease, acute)		
Poliomyelitis	S	
Psittacosis (ornithosis)	S	
Q fever	S	
Rabies	S	
Rat-bite fever (*Streptobacillus moniliformis* disease, *Spirillum minus* disease)	S	
Relapsing fever	S	
Resistant bacterial infection or colonization (see multidrug-resistant organisms)		
Respiratory infectious disease, acute (if not covered elsewhere)		

Adults	S	
Infants and young children [c]	C	DI
Respiratory syncytial virus infection, in infants and young children, and immunocompromised adults	C	DI
Reye's syndrome	S	
Rheumatic fever	S	
Rickettsial fevers, tickborne (Rocky Mountain spotted fever, tickborne typhus fever)	S	
Rickettsialpox (vesicular rickettsiosis)	S	
Ringworm (dermatophytosis, dermatomycosis, tinea)	S	
Ritter's disease (staphylococcal scalded skin syndrome)	S	
Rocky Mountain spotted fever	S	
Roseola infantum (exanthem subitum)	S	
Rotavirus infection (see gastroenteritis)		
Rubella (German measles; also see congenital rubella)	D	F [y]
Salmonellosis (see gastroenteritis)		
Scabies	C	U(24 hrs)
Scalded skin syndrome, staphylococcal (Ritter's disease)	S	
Schistosomiasis (bilharziasis)	S	
Shigellosis (see gastroenteritis)		
Sporotrichosis	S	
Spirillum minus disease (rat-bite fever)	S	
Staphylococcal disease (*S aureus*)		
Skin, wound, or burn		

Major [a]	C	DI
Minor or limited [b]	S	
Enterocolitis	S [i]	
Multidrug-resistant (see multidrug-resistant organisms)		
Pneumonia	S	
Scalded skin syndrome	S	
Toxic shock syndrome	S	
Streptobacillus moniliformis disease (rat-bite fever)	S	
Streptococcal disease (group A streptococcus)		
Skin, wound, or burn		
Major [a]	C	U(24 hrs)
Minor or limited [b]	S	
Endometritis (puerperal sepsis)	S	
Pharyngitis in infants and young children	D	U(24 hrs)
Pneumonia in infants and young children	D	U(24 hrs)
Scarlet fever in infants and young children	D	U(24 hrs)
Streptococcal disease (group B streptococcus), neonatal	S	
Streptococcal disease (not group A or B) unless covered elsewhere	S	
Multidrug-resistant (see multidrug-resistant organisms)		
Strongyloidiasis	S	
Syphilis		
Skin and mucous membrane, including congenital, primary, secondary	S	
Latent (tertiary) and seropositivity without lesions	S	

Tapeworm disease		
Hymenolepis nana	S	
Taenia solium (pork)	S	
Other	S	
Tetanus	S	
Tinea (fungus infection dermatophytosis, dermatomycosis, ringworm)	S	
Toxoplasmosis	S	
Toxic shock syndrome (staphylococcal disease)	S	
Trachoma, acute	S	
Trench mouth (Vincent's angina)	S	
Trichinosis	S	
Trichomoniasis	S	
Trichuriasis (whipworm disease)	S	
Tuberculosis		
Extrapulmonary, draining lesion (including scrofula)	S	
Extrapulmonary, meningitis [o]	S	
Pulmonary, confirmed or suspected or laryngeal disease	A	F [w]
Skin-test positive with no evidence of current pulmonary disease	S	
Tularemia		
Draining lesion	S	
Pulmonary	S	
Typhoid (*Salmonella typhi*) fever (see gastroenteritis)		
Typhus, endemic and epidemic	S	

Urinary tract infection (including pyelonephritis), with or without urinary catheter	S	
Varicella (chickenpox)	A,C	F [e]
Vibrio parahaemolyticus (see gastroenteritis)		
Vincent's angina (trench mouth)	S	
Viral diseases		
Respiratory (if not covered elsewhere)		
Adults	S	
Infants and young children (see respiratory infectious disease, acute)		
Whooping cough (pertussis)	D	F [s]
Wound infections		
Major [a]	C	DI
Minor or limited [b]	S	
Yersinia enterocolitica gastroenteritis (see gastroenteritis)		
Zoster (varicella-zoster)		
Localized in immunocompromised patient, disseminated	A,C	DI [m]
Localized in normal patient	S [m]	
Zygomycosis (phycomycosis, mucormycosis)	S	

Abbreviations:

* Type of Precautions: A, Airborne; C, Contact; D, Droplet; S, Standard; when A, C, and D are specified, also use S.
† Duration of precautions: CN, until off antibiotics and culture-negative; DI, duration of illness (with wound lesions, DI means until they stop draining); U, until time specified in hours (hrs) after initiation of effective therapy; F, see footnote.
[a] No dressing or dressing does not contain drainage adequately.
[b] Dressing covers and contains drainage adequately.
[c] Also see syndromes or conditions listed in Table 2.

[d] Install screens in windows and doors in endemic areas.
[e] Maintain precautions until all lesions are crusted. The average incubation period for varicella is 10 to 16 days, with a range of 10 to 21 days. After exposure, use varicella zoster immune globulin (VZIG) when appropriate, and discharge susceptible patients if possible. Place exposed susceptible patients on Airborne Precautions beginning 10 days after exposure and continuing until 21 days after last exposure (up to 28 days if VZIG has been given). Susceptible persons should not enter the room of patients on precautions if other immune caregivers are available.
[f] Place infant on precautions during any admission until 1 year of age, unless nasopharyngeal and urine cultures are negative for virus after age 3 months.
[g] Additional special precautions are necessary for handling and decontamination of blood, body fluids and tissues, and contaminated items from patients with confirmed or suspected disease. See latest College of American Pathologists (Northfield, Illinois) guidelines or other references.
[h] Until two cultures taken at least 24 hours apart are negative.
[i] Call state health department and CDC for specific advice about management of a suspected case. During the 1995 Ebola outbreak in Zaire, interim recommendations were published.(97) Pending a comprehensive review of the epidemiologic data from the outbreak and evaluation of the interim recommendations, the 1988 guidelines for management of patients with suspected viral hemorrhagic infections (16) will be reviewed and updated if indicated.
[j] Use Contact Precautions for diapered or incontinent children <6 years of age for duration of illness.
[k] Maintain precautions in infants and children <3 years of age for duration of hospitalization; in children 3 to 14 years of age, until 2 weeks after onset of symptoms; and in others, until 1 week after onset of symptoms.
[l] For infants delivered vaginally or by C-section and if mother has active infection and membranes have been ruptured for more than 4 to 6 hours.
[m] Persons susceptible to varicella are also at risk for developing varicella when exposed to patients with herpes zoster lesions; therefore, susceptibles should not enter the room if other immune caregivers are available.
[n] The "Guideline for Prevention of Nosocomial Pneumonia" (95,96) recommends surveillance, vaccination, antiviral agents, and use of private rooms with negative air pressure as much as feasible for patients for whom influenza is suspected or diagnosed. Many hospitals encounter logistic difficulties and physical plant limitations when admitting multiple patients with suspected influenza during community outbreaks. If sufficient private rooms are unavailable, consider cohorting patients or, at the very least, avoid room sharing with high-risk patients. See "Guideline for Prevention of Nosocomial Pneumonia" (95,96) for additional prevention and control strategies.
[o] Patient should be examined for evidence of current (active) pulmonary tuberculosis. If evidence exists, additional precautions are necessary (see tuberculosis).
[p] Resistant bacteria judged by the infection control program, based on current state, regional, or national recommendations, to be of special clinical and epidemiologic significance.
[q] For 9 days after onset of swelling.
[r] Maintain precautions for duration of hospitalization when chronic disease occurs in an immunodeficient patient. For patients with transient aplastic crisis or red-cell crisis, maintain precautions for 7 days.
[s] Maintain precautions until 5 days after patient is placed on effective therapy.
[t] Avoid cohorting or placement in the same room with a CF patient who is not infected or colonized with *B cepacia*. Persons with CF who visit or provide care and are not infected or colonized with *B cepacia*

may elect to wear a mask when within 3 ft of a colonized or infected patient.
[u] Avoid placement in the same room with an immunocompromised patient.
[v] Until 7 days after onset of rash.
[w] Discontinue precautions *only* when TB patient is on effective therapy, is improving clinically, and has three consecutive negative sputum smears collected on different days, or TB is ruled out. Also see CDC "Guidelines for Preventing the Transmission of Tuberculosis in Health-Care Facilities."(23)

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Appendix 8: Tuberculosis Risk Assessment Form

Virginia Department of Health Division of Tuberculosis Control
Tuberculosis (TB) Risk Assessment Form (TB 512)

Patient Name (L, F):_____

Address:_____

Home Telephone:_____ Work Telephone:_____ Cell Phone:_____

DOB:____/____/____ Sex:____ Social Security Number:_____ Ethnicity:_____ Race:_____

Country of Birth:_____ If applicable, year of US arrival:_____

Language(s) Spoken:_____ Interpreter needed? ___No ___Yes

History of Prior BCG? ___No ___Yes, specify year:_____ If female, is patient pregnant? ___No ___Yes, specify LMP:___/___/___

Drug allergies:_____

I. Screen for TB Symptoms Check all that apply)

___No Symptoms (Skip to "Screen for Infection Risk" Section)

___Cough for > 3 weeks
___Unexplained Fever
___Hemoptysis
___Unexplained weight loss
___Unexplained chest pain

If any of these symptoms are present, evaluate the patient for active TB disease. TB Skin Test may be administered as part of this evaluation.

The following symptoms are less specific for TB and should be evaluated in context.

___Anorexia ___Night Sweats ___Fatigue

II. Screen for TB Infection Risk (Check all that apply)

Individuals with an increased risk for acquiring latent TB infection (LTBI) or for progression to active disease once infected should have a TST. Screening for persons with a history of LTBI should be individualized.

A. Assess Risk for Acquiring LTBI

___Person is a current close contact of a person known or suspected to have TB disease → Name of source case:_____
___Person has lived in a country - for 3 months or more - where TB is common, and has been in the US for 5 or fewer years
___Person is a resident/employee of high TB risk congregate settings
___Person is a health care worker who serves high-risk clients
___Person is medically underserved
___Person has been homeless within the last two years
___Person is an infant, a child or an adolescent exposed to an adult(s) in high-risk categories
___Person injects illicit drugs
___Person is a member of a group identified by the local health department to be at an increased risk for TB infection
___Person needs baseline/annual screening approved by health dept.

B. Assess Risk for Developing TB Disease if Infected

___Person is HIV positive
___Person's HIV status is unknown, but has risk for HIV infection
___Person was recently infected with *Mycobacterium tuberculosis*
___Person has certain clinical conditions that place them at high risk
___Person injects illicit drugs
___Person has a history of inadequately treated TB
___Person is >10% below ideal body weight
___Person is on immunosupressive therapy

Prior Mantoux Tuberculin Skin Test (TST)?
___No ___Yes, specify Date:____/____/____ Induration:_____mm

Prior TB Treatment? ___No ___Yes, complete the following:

Complete if Hx of TB Tx

___LTBI ___TB Disease
Year of treatment:_____ Treatment Duration:_____
TB Medications taken:_____
_____
_____
Location of treatment:_____
_____

III. Finding(s) (Check all that apply)

___Previous Treatment for LTBI and/or TB disease
___No risk factors for TB infection
___Risk(s) for infection and/or progression to disease
___Possible TB suspect
___Previous positive TST, no prior treatment

IV. Action(s) (Check all that apply)

___Issued screening letter ___Issued sputum containers
___Referred for CXR ___Other_____
___Referred for medical evaluation
___Administered the Mantoux TB Skin Test

TST #1		*TST #2*	
Arm	___Left ___Right	Arm	___Left ___Right
Date Given	___/___/____	Date Given	___/___/____
Time Given	_____	Time Given	_____
Date Read	___/___/____	Date Read	___/___/____
Time Read	_____	Time Read	_____
Induration	_____mm	Induration	_____mm
___Positive	___Negative	___Positive	___Negative

Screener Signature:_____
Screener Name (Print):_____
Screener Title:_____
Date:_____ Phone Number:_____
Primary Care Provider:_____
Primary Care Provider Phone Number:_____
Comments:_____
_____

A decision to test is a decision to treat.

Due to high rates of false positive TB skin test results, the Division of TB Control discourages administration of the Mantoux TST to persons who are at a low risk for TB infection.

Appendix 9: Respirator Medical Evaluation

This questionnaire is used in determining whether or not you have a medical condition that may affect your ability to safely wear a respirator. We anticipate being able to approve most people for respirator used base on this questionnaire alone. In some cases, we may ask for more information or additional medical testing/evaluation. Fit testing is also required and is done separately. *All medical information is confidential.*

All sections must be completed for respirator approval.

Name		SSN	
DOB	Age	Employee Number	Location
When using respirator, work is:_____light _____moderate _____heavy	Shifts per week Respirator is worn: _____<1 _____ 1-4 _____ almost every shift		Length of time worn in a shift: _____<1 hour _____1-5 hours _____5-12

	Has a doctor ever told you that you have any of the following?	**YES**	**NO**
Medical History	Angina	_____	_____
	Heart Attack	_____	_____
	Heart Disease	_____	_____
	Epilepsy of Seizure	_____	_____
	High Blood Pressure	_____	_____
	Insulin Dependent Diabetes	_____	_____
	Lung Disease	_____	_____
	Emphysema	_____	_____
	Asthma	_____	_____
	Are you allergic to natural rubber latex?	_____	_____
	Are you a smoker?	_____	_____
	Are you an ex-smoker?	_____	_____
	Have you ever smoked?	_____	_____
	Are you currently taking any medications?	_____	_____
	Please list: _____		
	Explain "yes" answers by number: _____		
Review Of Systems	Are you short of breath at rest	_____	_____
	Do you get short of breath when walking?	_____	_____
	Do you get short of breath at work?	_____	_____
	Do chest get chest pain with certain activities	_____	_____
	Do you get chest pain at work?	_____	_____
	Do you have medical problems that might Interfere with respirator use?	_____	_____
	Do you have problems wearing a respirator?	_____	_____
	Explain "yes" answers by number_____		

Employee Signature_____Date_____

Health Department Only	_____**Approved** _____**Approved with Restrictions** _____**Denied** _____**More information needed**	Type of Respirator _____Size _____ Physician's Remarks _____ _____

Physician's Signature_____Date_____

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Attachments

Attachment 1. Guidelines for Infection Control in Health Care Personnel, 1998. American Journal of Infection Control 1998; 26:289-354. (Available at: http://www.cdc.gov/ncidod/hip/GUIDE/INFECTCONT98.htm)

Attachment 2. Recommendations for Isolation Precautions in Hospitals (Part II): Hospital Infection Control Practices Advisory Committee. (Available at: *http://www.cdc.gov/ncidod/hip/isolat/isopart2.htm*)

Attachment 3. Appendix D. 29 CFR Part 1910.1030 Occupational Exposure to Bloodborne Pathogens; Final Rule. Occupational Safety and Health Administration (OSHA), U.S. Department of Labor. Federal Register, 1991. (Available at: http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10051)

Attachment 4. Immunization of Health-Care Workers: Recommendations of the Advisory Committee on Immunization Practices (ACIP) and the Hospital Infection Control Practices Advisory Committee (HICPAC). MMWR 1997; 46(RR-18);1-42. (Available at: http://www.cdc.gov/epo/mmwr/preview/mmwrhtml/00050577.htm)

Attachment 5. Updated U.S. Public Health Service Guidelines for the Management of Occupational Exposures to HBV, HCV, and HIV and Recommendations for Postexposure Prophylaxis. MMWR 2001; 50(RR11);1-42. (Available at: http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5011a1.htm)

Attachment 6. Guideline for Hand Hygiene in Health-Care Settings: Recommendations of the Healthcare Infection Control Practices Advisory Committee and the HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force. MMWR 2002; 51(RR16);1-44. (Available at: http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5116a1.htm)

Attachment 7. Guideline for Preventing the Transmission of Mycobacterium in Healthcare Facilities MMWR 1994; 43(RR13); 1-132 (Available athttp://www.cdc.gov/mmwr/PDF/RR/RR4313.pdf)